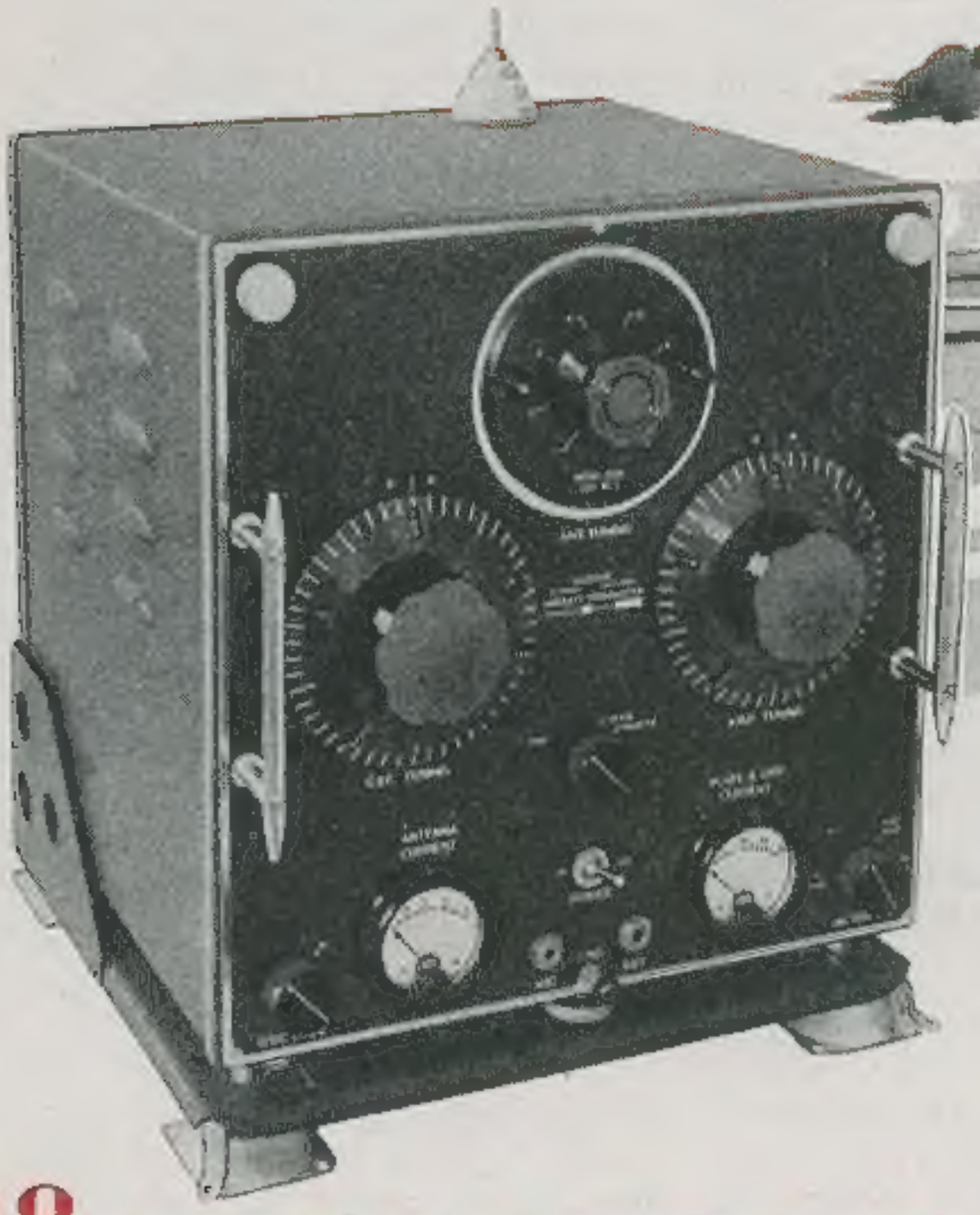
Radio Out of a Hat!



A new interpretation of simplified VHF, scheduled for early announcement, is the latest development of the company's radio engineering laboratory.

Quality in quantity is the keynote of all Pacific Division manufacturing processes.

Pacific Division's engineering ability is matched by its outstanding production facilities. Here future VHF equipment will be manufactured in volume.

88 DAYS FROM DRAFTING BOARD TO FLIGHT LINE

Germany stunned the world in '39 with their *blitzkrieg*. At exactly the same time another *blitzkrieg* was quietly being made by the Canadians in this country. They needed airplanes and radio communication equipment—fast.

The airplanes they got...and the radios. There were less than 90 days left when Pacific Division got the go ahead for transmitters and interphone equipment that had not even been designed.

In 88 days Pacific Division designed—developed—and delivered a quantity of 100-watt master oscillator transmitters for low and high frequency...amplifiers for the interphone...and engineered and installed these and all other radio equipment in the Canadian airplanes.

We at Pacific Division would rather not accept any more orders that we have to pull out of a hat. But we are open for business, especially VHF Communication Systems in which we specialize, that demands experience, ability and resourcefulness. Your inquiries are invited.

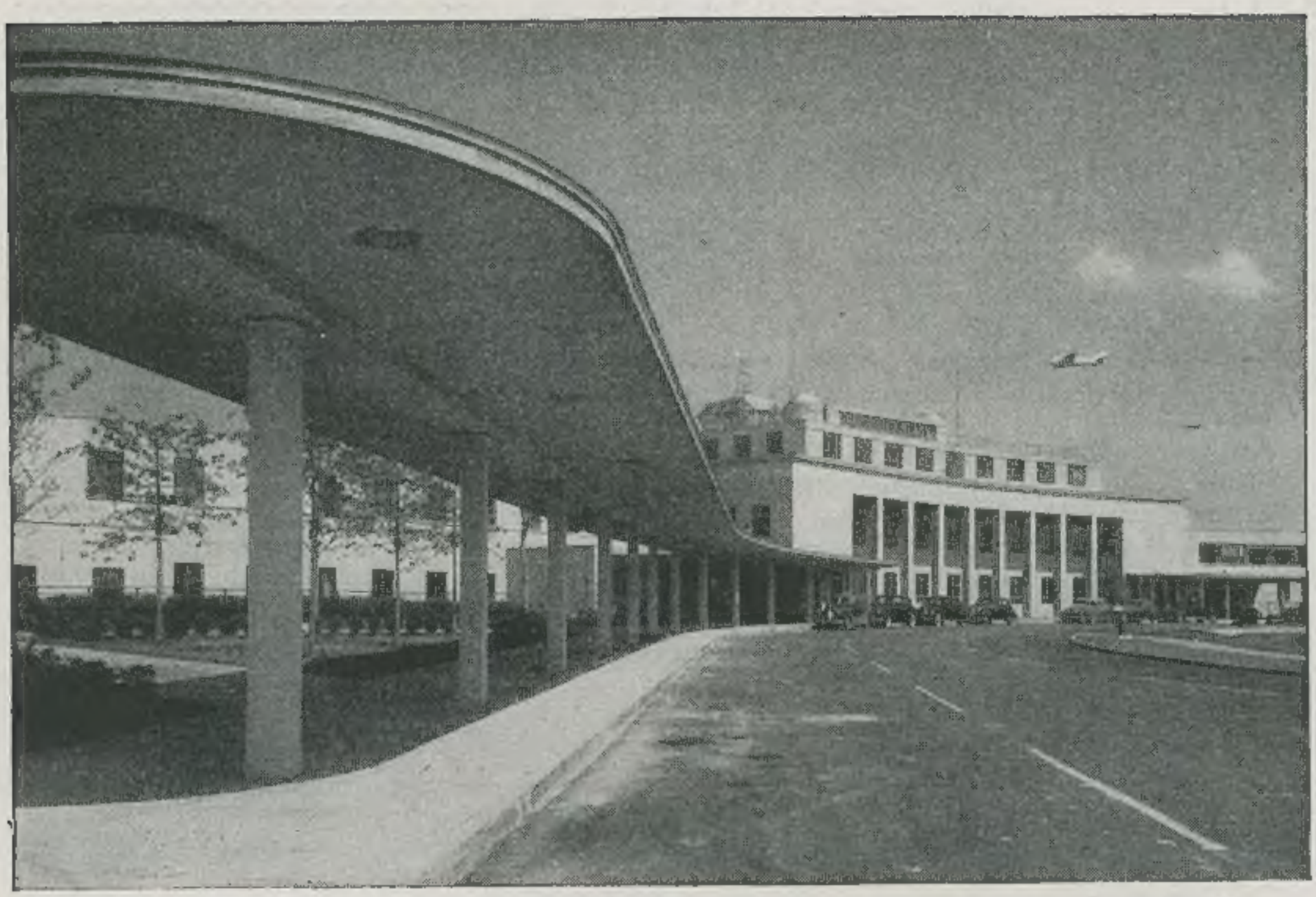
© 1945, Bendix Aviation Corp.

Pacific Division
Bendix Aviation Corporation
NORTH HOLLYWOOD 7, CALIF.
LINCOLN 4-DC NEW YORK 17 — CONTINENTAL BLDG ST. LOUIS 1

VHF COMMUNICATION SYSTEMS

PRODUCT OF Bendix AVIATION CORPORATION

OPERATING SIX VHF EXPERIMENTAL STATIONS

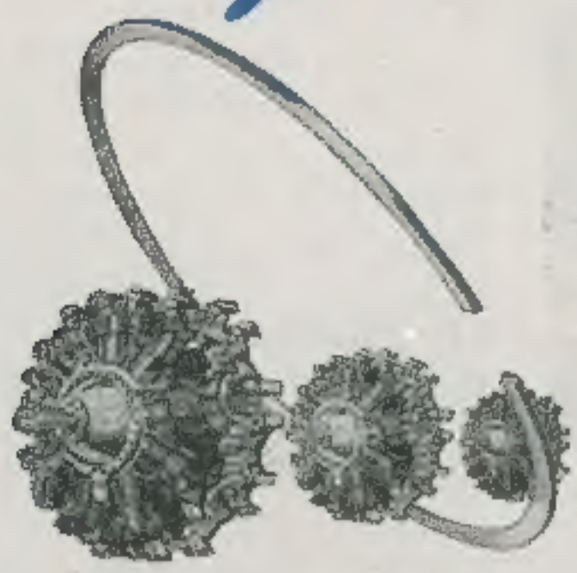


THE ROOF OF TOMORROW WAS HERE YESTERDAY

Some of the finest roof records for long life and lack of expense have been built up over the past half century by roofs of coal tar pitch. In spite of the many improvements which have been discovered or developed during the war, no one has been able to find any roofing that is better able to withstand years and weather than these coal tar materials. That is why so many "roofs of tomorrow" like those on airport buildings are being built of Koppers Coal Tar Pitch and felt.

KOPPERS

and Aviation



Koppers, through its American Hammered Piston Ring Division, is one of the largest manufacturers of piston rings in the world.

Automatic variable-pitch control for military and post-war planes is obtained with the "Aeromatic" Aircraft Propeller, produced by the Bartlett Hayward Division of Koppers.

Buy War Bonds . . . And Keep Them!

KOPPERS COMPANY, INC., Pittsburgh 19, Pa.

KOPPERS

THE INDUSTRY THAT SERVES ALL INDUSTRY

battle-proven
VIBRASHOCK*
available for light planes

Before you choose any radio or electronic equipment for your personal light plane, ask this question: How is it going to be shock mounted? In the past poorly maintained radio equipment has proven a constant source of trouble, expense, and lost flight time.

Unprotected from vibration and shock, the very best airborne equipment cannot stand up for long. Repairs and maintenance of your equipment will actually cost *many times the original investment* unless shock and vibration is adequately controlled. Present personal plane owners are well aware of this fact.

There is *one* shock mount that accomplishes this purpose. It is the Robinson Vibrashock suspension. Vibrashock suspensions are the only complete, fully engineered suspensions guaranteed to absorb over 90% of all vibration within the operating range of aircraft. This is an efficiency rating far beyond previous shock mount standards.

Vital airborne equipment on Army and Navy airplanes is supported by Vibrashock. You too can have this same dependable protection against vibration if you insist on Vibrashock suspensions for all your communication and flight equipment. Check with the manufacturer of the plane you propose to buy.

*Trade Mark

ROBINSON AVIATION, INC.

730 Fifth Avenue, New York 19, N. Y.
3757 Wilshire Blvd., Los Angeles 5, Calif.

...and what a show it will be!

We all anticipate the day when people will flock to exhibitions of new-model planes—*private* planes. "A world on wings" means something more than global air transportation. Revolutionary developments in communications and other electronic equipment—many of them born of war—will stimulate air travel generally. In this field, Western Electric is leading the way.

Buy all the War Bonds you can—and keep them!

Western Electric

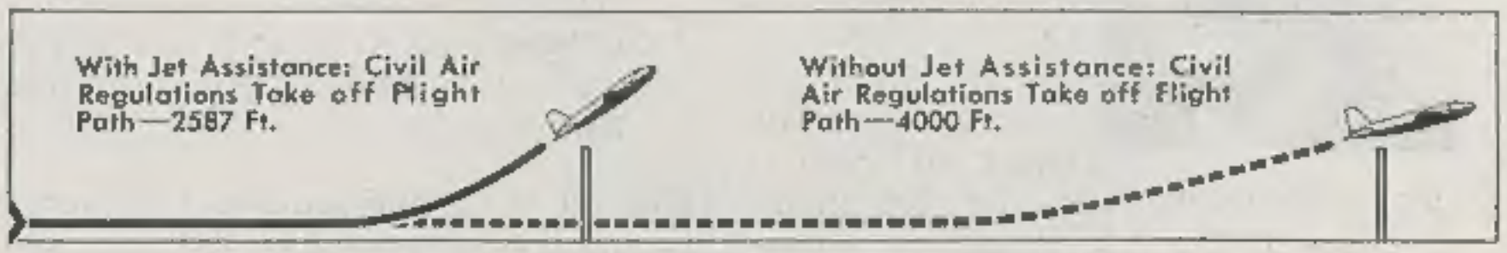
Distributed by GraybaR

RADIO AND OTHER ELECTRONIC EQUIPMENT FOR A WORLD ON WINGS

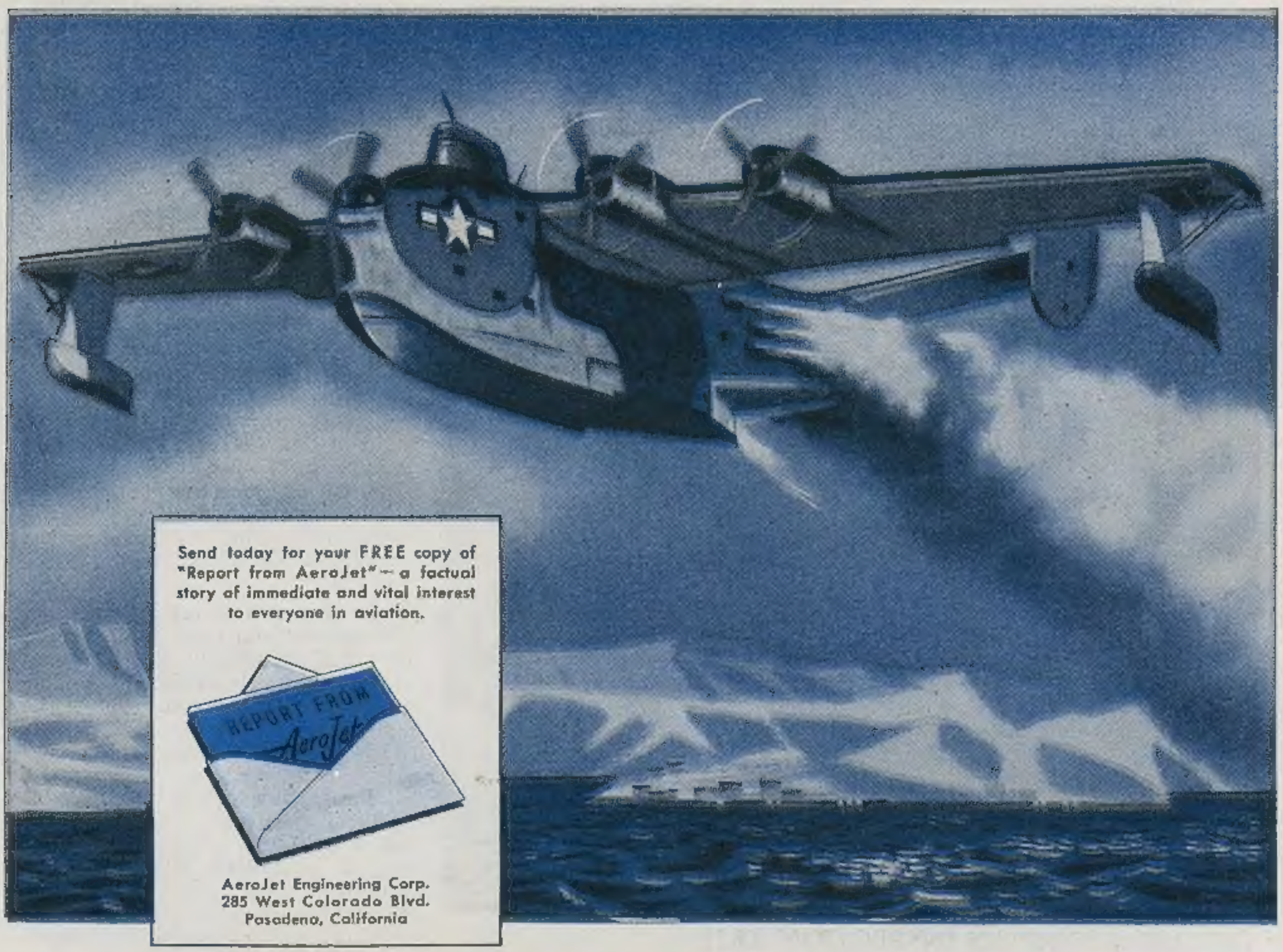
12 seconds of the most valuable time "on earth"!

Jet assisted take-off, born of war, will be commercial flying's greatest single aid when final peace comes. Directly adaptable to any type of airplane . . . capable of flying maximum payloads out of nearly any field at any altitude . . . Jet Assistance is the solution to the airlines' problem of getting profit payloads off the ground. The 12 seconds average thrust duration of AeroJet Assistance is worth much to the operator who looks to extra profits.

AeroJet Engineering Corporation has made many thousands of jet assistance units (Jatos) for the Army and Navy. Its research and development facilities are unequalled. AeroJet invites inquiries from any organization interested in learning more about this new science. An informative booklet—"Report from AeroJet" —has been prepared. Write for it today.


With Jet Assistance: Civil Air Regulations Take off Flight Path—2587 Ft.
Without Jet Assistance: Civil Air Regulations Take off Flight Path—4000 Ft.

DC-3 Analysis as Described in "Report from AeroJet"



Send today for your FREE copy of "Report from AeroJet"—a factual story of immediate and vital interest to everyone in aviation.

AeroJet Engineering Corp.
285 West Colorado Blvd.
Pasadena, California

AeroJet Engineering Corporation • Affiliate of THE GENERAL TIRE & RUBBER CO.

THE POWER OF THE FUTURE... **AeroJet**

PATTERN FOR TOMORROW'S AIRLINES. Along with good planes and pilots, the new regional and local airlines starting in business will need the best and most complete instrument equipment they can buy. Instruments are the backbone of safe operation . . . the kind of operation our pioneer airlines have taught the nation to expect in scheduled air transportation. Instruments also have everything to do with regularity of service, and this regularity of service—around the clock, around the calendar—means not only service to the public but the fullest and most economical use of the new air carrier's investment in equipment. Tomorrow's airlines will find Kollsman accuracy and dependability important aids to the safety, regularity and economy of their operations.

KOLLSMAN AIRCRAFT INSTRUMENTS

PRODUCT OF

SQUARE D COMPANY

ELMHURST, NEW YORK · GLENDALE, CALIFORNIA

1. Positive vapor-control in high altitude flight
2. Stabilized flow of bubble-free fuel
3. Trouble-free bearing and seal arrangement
4. Self-priming even under extreme conditions
5. Ability to pump the fuel tank dry
6. Variety of installation adaptations

PESCO advanced design and performance extend through a complete line of air, vacuum, fuel and hydraulic pumps . . . precision equipment meeting practically all aircraft needs for controlled liquid flow and Pressurized Power.

Increased engine power, faster climb and higher altitude capabilities of modern aircraft demand a fuel booster pump having greater and more positive vapor separating characteristics to handle the larger fuel flow under the more severe operating conditions.

To meet this demand, PESCO now offers an entirely new fuel booster pump—a tank-mounted, compact, electric motor-driven, centrifugal pump in various models for either submerged or external installation. PESCO precision workmanship assures the highest standards of performance and dependability. Write today for new "PESCO Vapor Control" Booklet No. 9. PESCO Products Co., (Division Borg-Warner) 11610 Euclid Ave., Cleveland 6, Ohio.

In Aircraft Hydraulics, Fuel Pumps,
Air Pumps, Related Accessories . . .
PERFORMANCE POINTS TO Pesco FIRST

Illustrating two extremes of Emerson-Electric's gear manufacturing ability—tiny beveled gear and the large Azimuth ring gear, the latter machined from a solid-bronze cast ring.

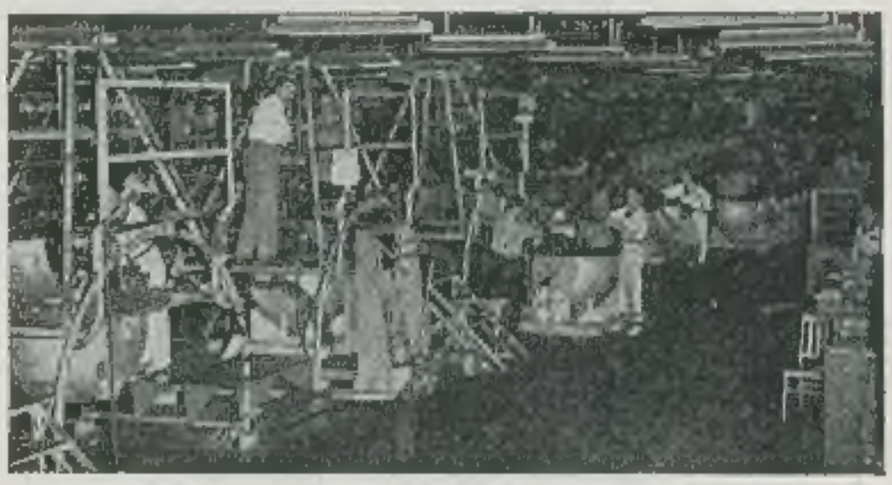
All in the day's work...

AT THE EMERSON-ELECTRIC TURRET PLANT

In becoming one of the world's largest manufacturers of airplane turrets, Emerson-Electric has developed many manufacturing processes involving extremely precise standards of accuracy.... Precision gear manufacture has played a vital part in advancing the new art of airplane turret manufacture. Typical of this are the Emerson-Electric made gears illustrated above. Each gear is individually inspected, checked and matched—because a single case of failure or excessive backlash could easily become disastrous in aerial combat.

Emerson-Electric engineering knowledge and facilities are available for the design and production of all forms of airplane armament equipment. Your inquiries are invited.

THE EMERSON ELECTRIC MANUFACTURING CO.
ST. LOUIS 21, MO.
(Turret Division—8100 Florissant Ave.)



Sperry Lower Ball Turret functional test fixtures at the end of final assembly line.

Emerson-Electric designed and built Nose Turret.

ARMY E NAVY

EMERSON ELECTRIC

AIRPLANE ARMAMENT

AIRBORNE DEHYDRATING EQUIPMENT

This D-10 Dehydrator Unit for the B-29 Bomber is just another practical application of the Russell R. Gannon System for the control of moisture content, relative humidity, and dew point of air and gases.

This unit including its dehydrating cartridge weighs but four pounds and has a moisture pick up capacity of 50 grams of water while maintaining a dew point of 90° F below zero.

The Gannon System is applicable to many other dehydrating problems, and usually eliminates expensive and cumbersome installations.

The dehydrating chemicals are so inexpensive to replace as to be expendable at a negligible cost.

Precision tested dew point color change indicators are available to insure accuracy of working conditions.

If you have a dehydrating problem, consult Gannon. Gannon's Engineers welcome your inquiry.

Russell R. GANNON Co.
AIR CONDITIONING EQUIPMENT
Cincinnati 2 • Ohio

LIGHT landings for HEAVYweights!

To help make safe landings, giant transport planes, such as the Constellation illustrated, are equipped with AEROLS (Cleveland Pneumatic shock absorbing landing gear). By protecting plane, crew and cargo, AEROLS contribute substantially to aviation's progress—as planes grow in size, weight and speed, AEROLS help solve their landing problems. ◆ Our major products, used in many industrial fields, are mentioned below. Whatever your needs, Cleveland Pneumatic engineers offer you the benefit of over 50 years manufacturing experience.

THE CLEVELAND PNEUMATIC TOOL CO., Cleveland 5, Ohio

Speed Final Victory! Buy MORE War Bonds

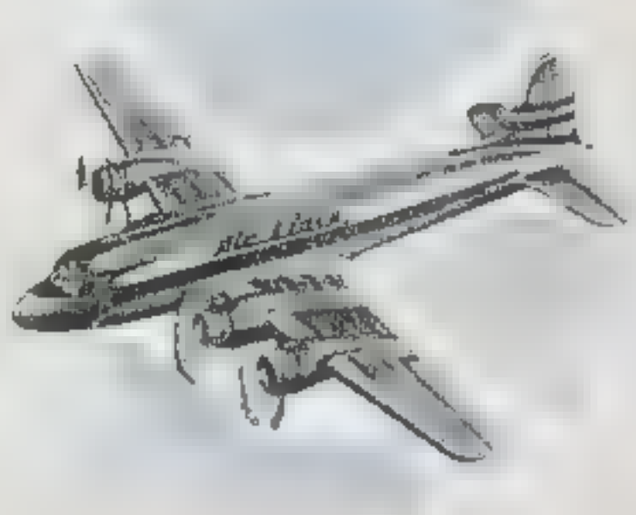
25 YEARS of Air Transport Progress

IN 30 SECONDS READING TIME

Yesterday: First scheduled coast-to-coast air mail flight took off from Mineola, L. I., on September 8, 1920. Route followed was the historic Overland Trail — pathway of American progress — trailway of the prairie schooner, the Pony Express, the stage coach. The complete cross-country trek took 82⅔ hours . . . made in combination air-rail relays — in converted war-time De Havilands by day — fast trains by night. ***Parker fittings gave reliable performance in early seat-of-the-pants flying days.***

Today: Modern United Air Lines' Douglas DC-3 Mainliners fly coast-to-coast overnight. Associate air lines link every part of country and many points of globe with safe, on-time flights despite increased war-time traffic. ***Parker tube fittings, valves and related products being given unqualified endorsement by both air line operators as well as military aircraft builders for proved performance and dependable service.***

Tomorrow: Coast-to-coast one-stop flying in less than 10 hours — in planes carrying more than 50 passengers. Sky giants, now on manufacturer's drawing boards, will make possible over night flights to any city in the world. ***Parker aircraft products — pioneered in peace and proved in war — will continue to sustain the wings of transport in the coming age of flight.***



PARKER PRODUCTS

THE PARKER APPLIANCE COMPANY • Cleveland • Los Angeles

DAYTON DETROIT CHICAGO KANSAS CITY DALLAS SEATTLE

Continental-Diamond
Engineered Non-Metallic Materials

The DILECTO punched part illustrated is a stator for an aircraft booster switch. It must of course have high dielectric properties. It must also be strong enough to support current carrying parts, and not deteriorate from vibration and impact shock. Its dielectric properties must be stable regardless of temperature, humidity or dryness. Finally it had to be made from a material that could be accurately punched. DILECTO met all these requirements with a wide margin of safety.

There are many grades of DILECTO. Each developed to meet specific electrical, mechanical, chemical or thermal problems. Special grades can be developed to meet unusual problems. DILECTO is also available in combination with Diamond Fibre to still further enlarge its sphere of usefulness. This C-D NON-metallic may be the answer to your "What Material?" problem, in your present and future products, whether used in the air, on land or sea.

KE-45

C-D PRODUCTS

The Plastics

DILECTO—A Laminated Phenolic.
CELORON—A Molded Phenolic.
DILECTENE—A Pure Resin Plastic Especially Suited to U-H-F Insulation.
HAVEG—Plastic Chemical Equipment, Pipe, Valves and Fittings.

The NON-Metallics

DIAMOND Vulcanized FIBRE
VULCOID—Resin Impregnated Vulcanized Fibre.
MICABOND—Built-Up Mica Electrical Insulation.

Standard and Special Forms

Available in Standard Sheets, Rods and Tubes; and Parts Fabricated, Formed or Molded to Specifications.

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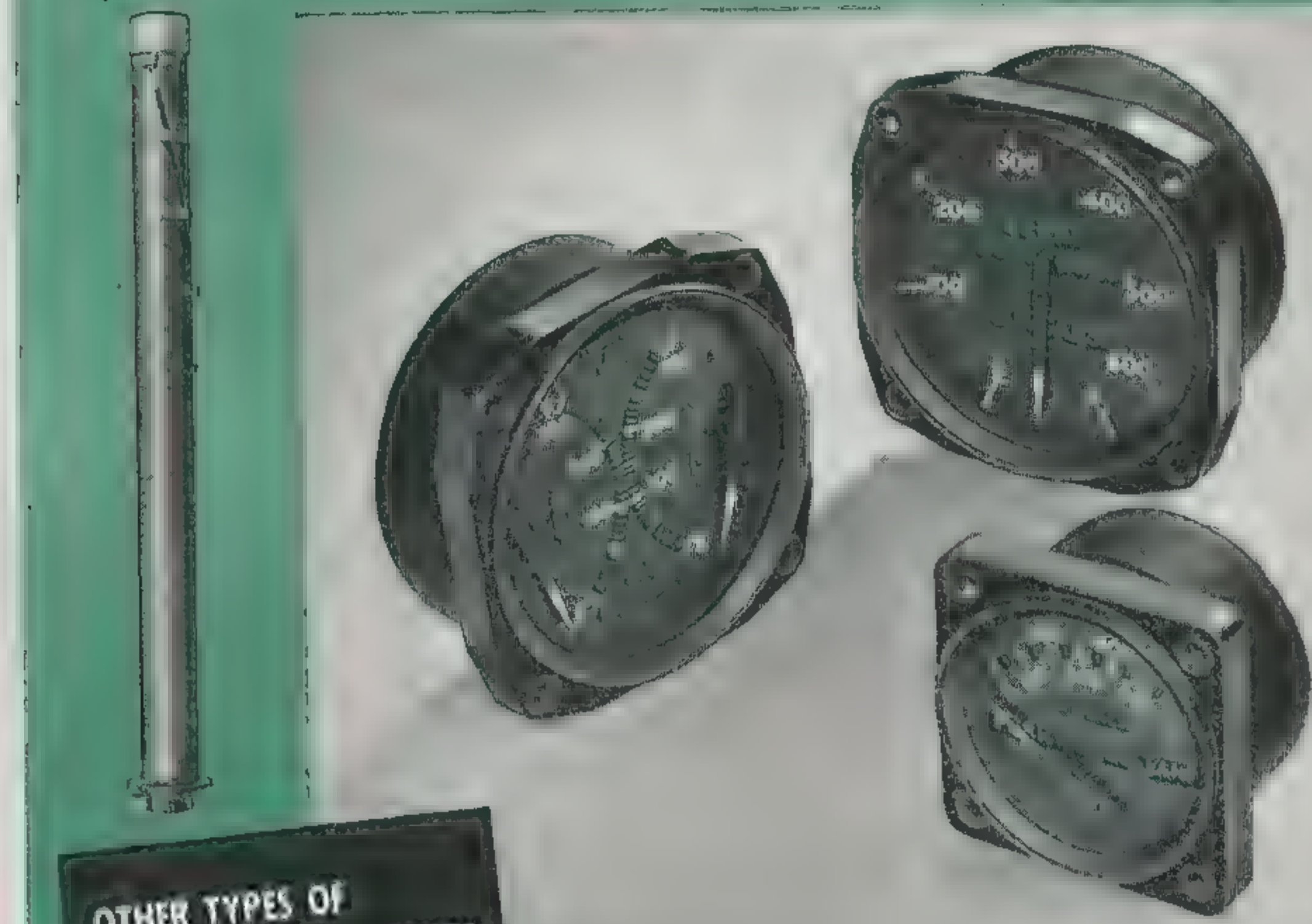
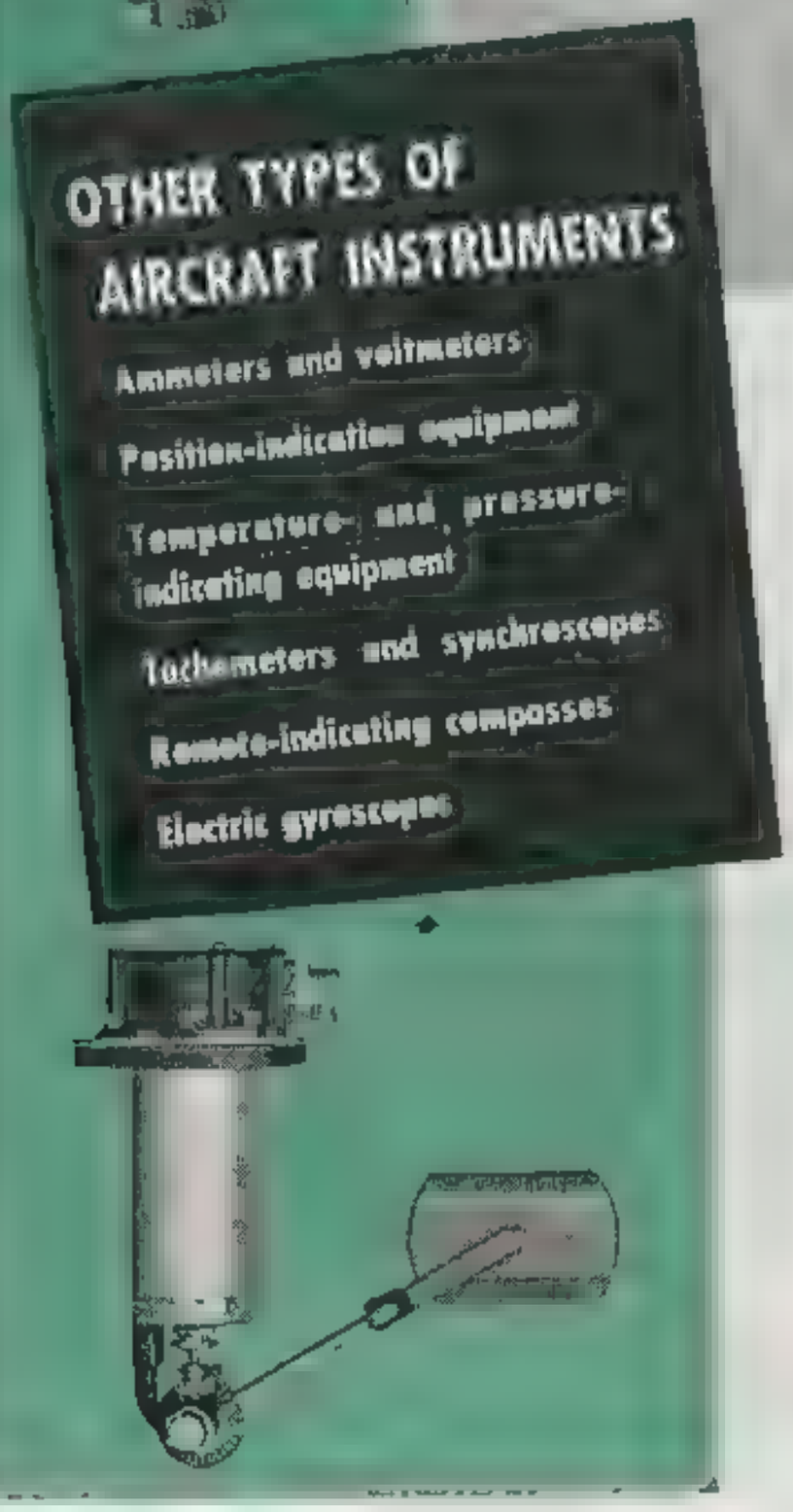
Established 1895 • Manufacturers of Laminated Plastics since 1911—NEWARK 4 • DELAWARE

AIRCRAFT INSTRUMENTS
by GENERAL ELECTRIC





Liquid-level-indicating Equipment

BECAUSE the fuel tanks of the different types of aircraft vary widely in size, shape, number, and location, the fuel-level instruments which operate successfully in one type of plane are seldom usable in another. This applies especially to the transmitters. General Electric has, therefore, designed and built several hundred different types of transmitters to meet these specific requirements.

When our facilities are no longer needed for war, we will continue to build many designs of aircraft instruments to meet your specific needs.

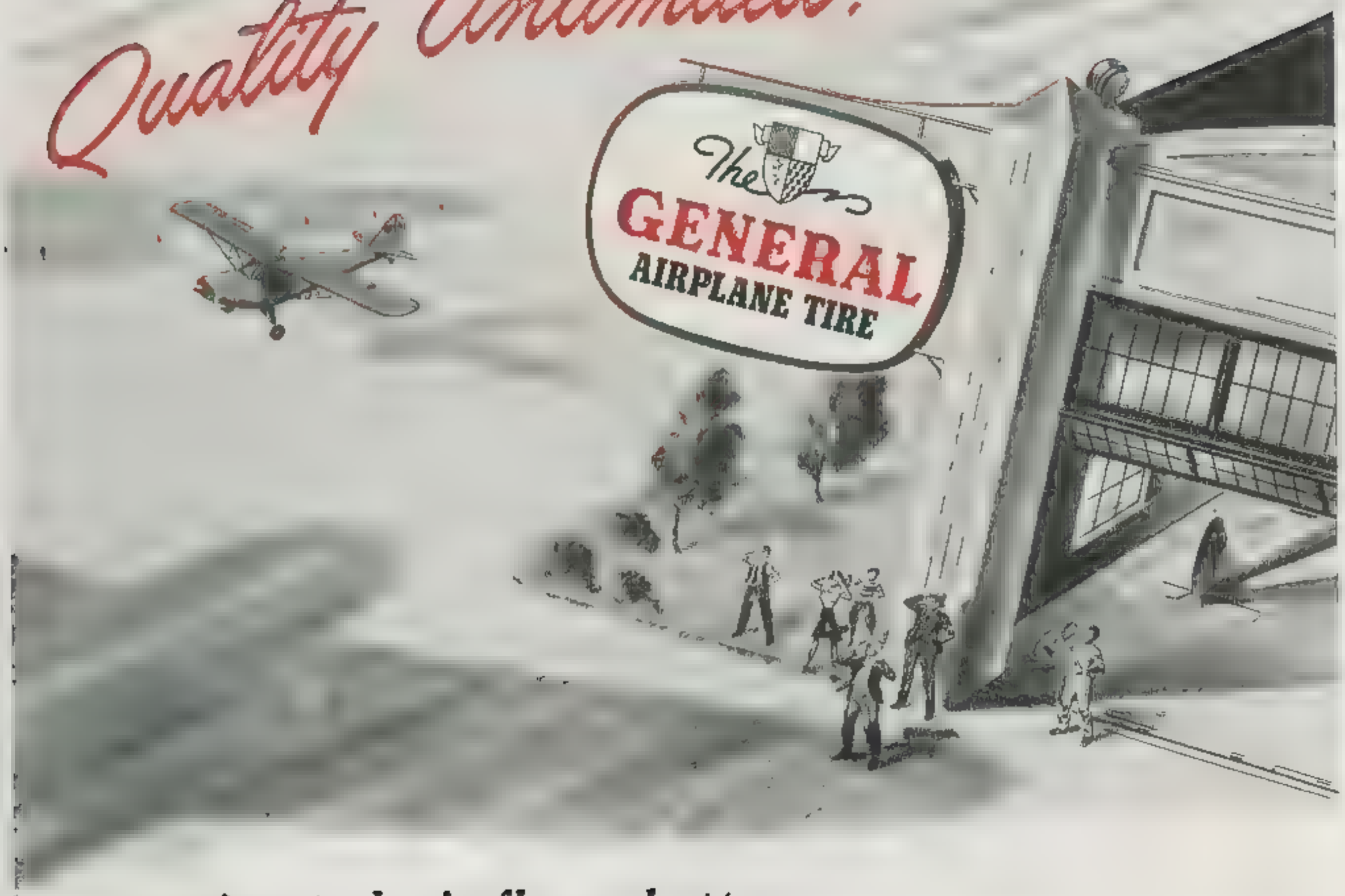
For help in the selection and application of G-E liquid-level-indicating equipment, write for Booklet GET-1066. For an explanation of the theory of operation of the various systems and detailed descriptions, write for Booklet GET-1185. *General Electric Company, Schenectady 5, N. Y.*

BUY ALL THE BONDS YOU CAN—AND *KEEP* ALL YOU *BUY*

GENERAL ELECTRIC

607-2-6300

Quality Unlimited!



serving today's flyers better
...building better ground service for tomorrow

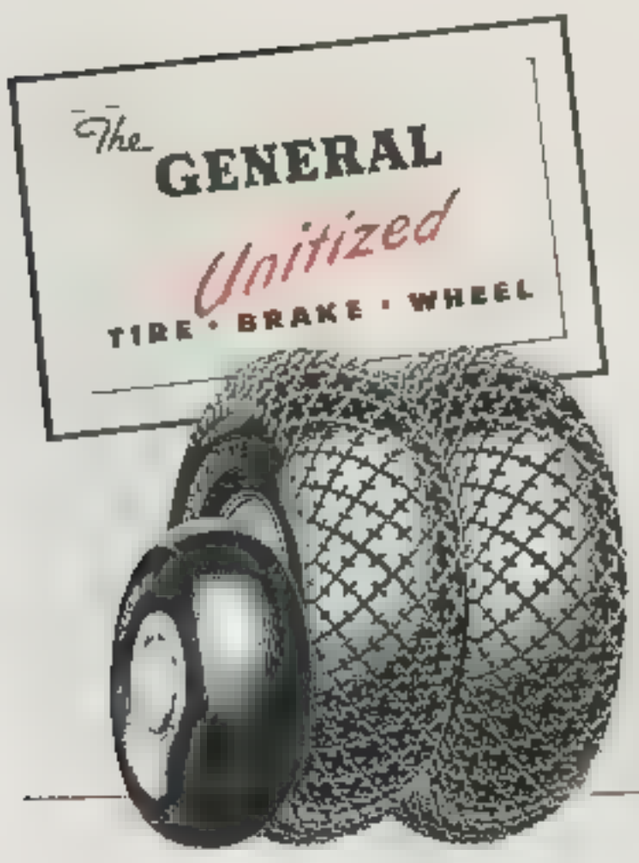
Yes, quality unlimited! That is the goal which keeps General Aviation Tires always ahead of the field in quality, safety and durability.

That aim, also, is a prime force helping to build a nation-wide network of the best in ground facilities. For where Generals are sold, ground service and facilities, too, measure up to the *best* . . . to an unlimited high in efficiency and completeness.

When the General Tire Sign marks an airport, flyers *have confidence.* Because, General's Aviation Distributors select airport retailers of General Tires by *strictest* service standards.

Airport service operators are helped to meet these standards by the General Distributors' complete aviation supplies which eliminate the need for costly airport stocks. Thus, operators' funds are released for expansion of improved ground service facilities.

Even during this war, General has supported this policy by producing continually improved General Aviation Tires and related products . . . by maintaining strategically located Distributor stocks coast-to-coast — to ease the airports' burden—and by promoting constant advancement in ground service for today's and tomorrow's flying public.



Unitized Landing and Auxiliary Wheels —In Matched Sets!

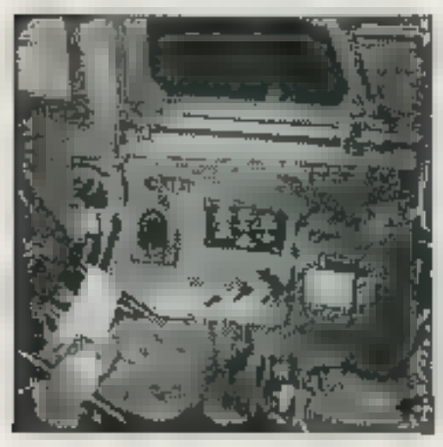
AVIATION DIVISION
THE GENERAL TIRE & RUBBER CO.
AKRON, OHIO

KNOWN ROUND THE WORLD FOR QUALITY AND SAFETY

FIBERGLAS* Insulation Type XM-PF for Aircraft

Helped the "Commando" weigh in lighter

The installation of Fiberglas Aircraft Insulation, instead of material formerly used, let the Curtiss C-46 Commando weigh in 200 pounds lighter.



View of pilot's compartment showing the inch-thick Fiberglas Insulation with diamond-quilted trim cloth.

Fiberglas Insulation, Type XM-PF is a lightweight, incombustible material. It is made of fine fibers of glass, bonded into a flexible blanket form. It has an exceptionally low moisture pick-up, even under conditions of extreme humidity. Fiberglas XM-PF weighs as little as one pound per cubic foot, yet provides an optimum of insulating effect.

It is easy to handle and install. And it requires no stitching or fitting to maintain its form and shape, even under extreme vibration. Fiberglas XM-PF Insulation serves a dual purpose in aircraft construction, providing a highly efficient acoustical and thermal insulation.

Helps the Airlines increase pay loads and comfort

Transports, released by the army for commercial service, are also being given the advantages of Fiberglas XM-PF, where weight reduction means bigger pay loads and customer comfort pays dividends.

Army transport being converted for civilian service by Douglas Aircraft Company, Inc.

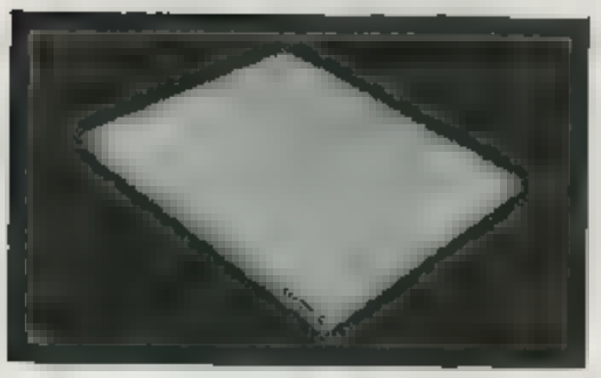
Fiberglas, in other forms, is being used by the military and commercial aircraft industry for both new construction and reconversion work. A few of the types and uses are listed below.

If you do not have complete data on Fiberglas in all of its various forms, or if you have a problem which Fiberglas may help solve, write: *Owens-Corning Fiberglas Corporation, 1892 Nicholas Building, Toledo 1, Ohio. In Canada, Fiberglas Canada Ltd., Oshawa, Ontario.*

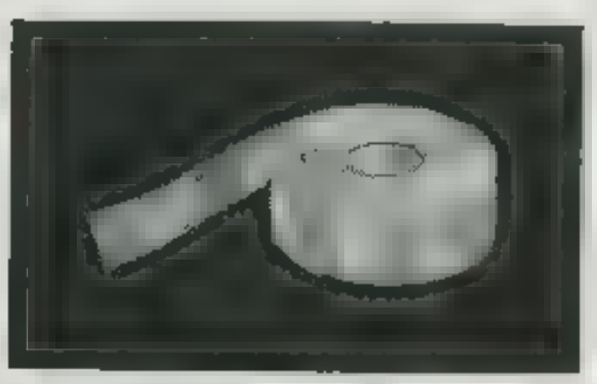
Buy War Bonds!

FIBERGLAS

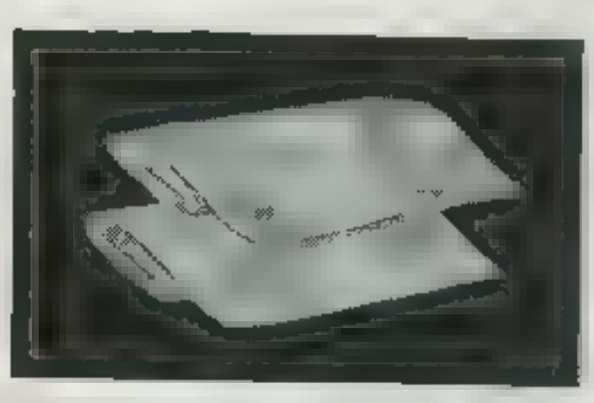
*T. M. Reg. U. S. Pat. Off.



AIRCRAFT REINFORCED PLASTICS PARTS—fabricators are combining certain low-pressure resins with Fiberglas fabrics. Lightweight, impact strength, sound dampening. Used for panels and formed parts.



AIRCRAFT TAPES—another all-glass product, woven from Fiberglas yarns. Incombustible. Used for insulating motors, generators, etc., and for lagging of thermal insulation on ducts and pipes.



AIRCRAFT COATED FABRICS—Fiberglas cloth used as a base for rubber, vinyl compounds and other coatings. Dimensional stability, high strength, humidity resistance. Used in flexible connections, etc.

JET PROPULSION

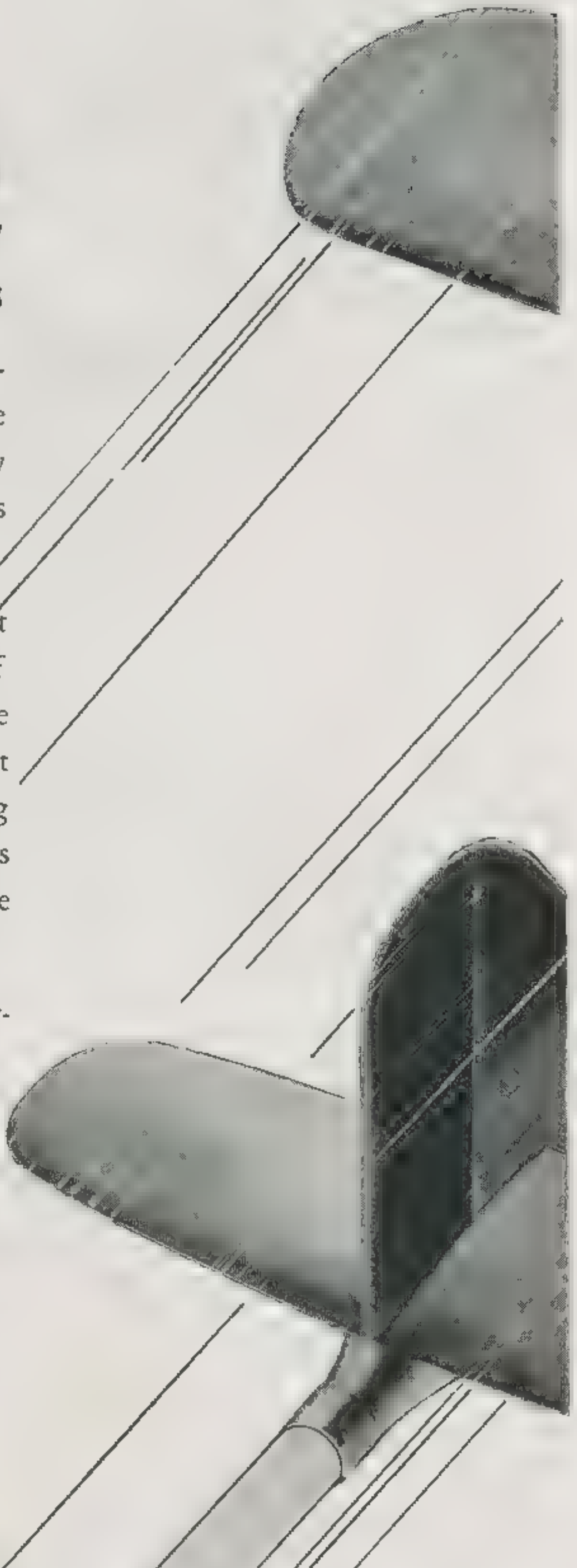
uses SOLAR 'know-how' on world's fastest planes

SOLAR engine parts and Solar tail-pipes are vital units in the miracle of Lockheed's "Shooting Star", that ghostly new jet-propelled fighter plane that rivals the speed of sound.

The selection of Solar to build important parts of jet engines is a natural result of Solar's fifteen years of experience in the handling of gases that were thought "too hot to handle" in engineering and fabricating airplane exhaust systems and other products of high-temperature alloys to resist excessive heat, corrosion and vibration.

The miracle of speed is based on the miracle of skill!

SOLAR skills continue to solve problems in the elimination of hot gases, the utilization of waste heat energy, the control and transfer of heat and products of high corrosion resistance.



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STAINLESS STEEL PRODUCTS

SOLAR AIRCRAFT COMPANY SAN DIEGO 12, CALIF. DES MOINES 5, IA.

For Smallest Precision Parts and Intricate Timing Gears

depend on

Tel-air

Consider the *small-ness* required of some of the most important precision parts! Timing gears, bomb fuzes, hundreds of "*big little*" components of aircraft; comparable to the size of a tiny tack! Yet on their sturdiness and microscopic *accuracy* depend the success of the entire mechanism.

On the perfection of such parts Tel-air has built a special and unexcelled reputation. "Tel-air means accuracy" is proverbial thruout precision manufacture.

TODAY IS NONE TOO SOON
to familiarize yourself with the exceptionally complete facilities, and the years of specialized engineering experience available to you in Tel-air. And tooling of toughest steels and newest alloys is a fine art here.

Where *surpassing* precision and *longest* dependability are essential objectives in your product—present or post-war—you can not afford to take chances. Make sure with Tel-air!

Teleoptic Directional Signals for the highway are made to the same standards of accuracy and dependability.

WITHOUT ANY OBLIGATION ON YOUR PART — bring your problem to Tel-air engineers, for *immediate* attention. And remember—PROMPT DELIVERY is a basic rule with Tel-air.

On the Highway it's Teleoptic

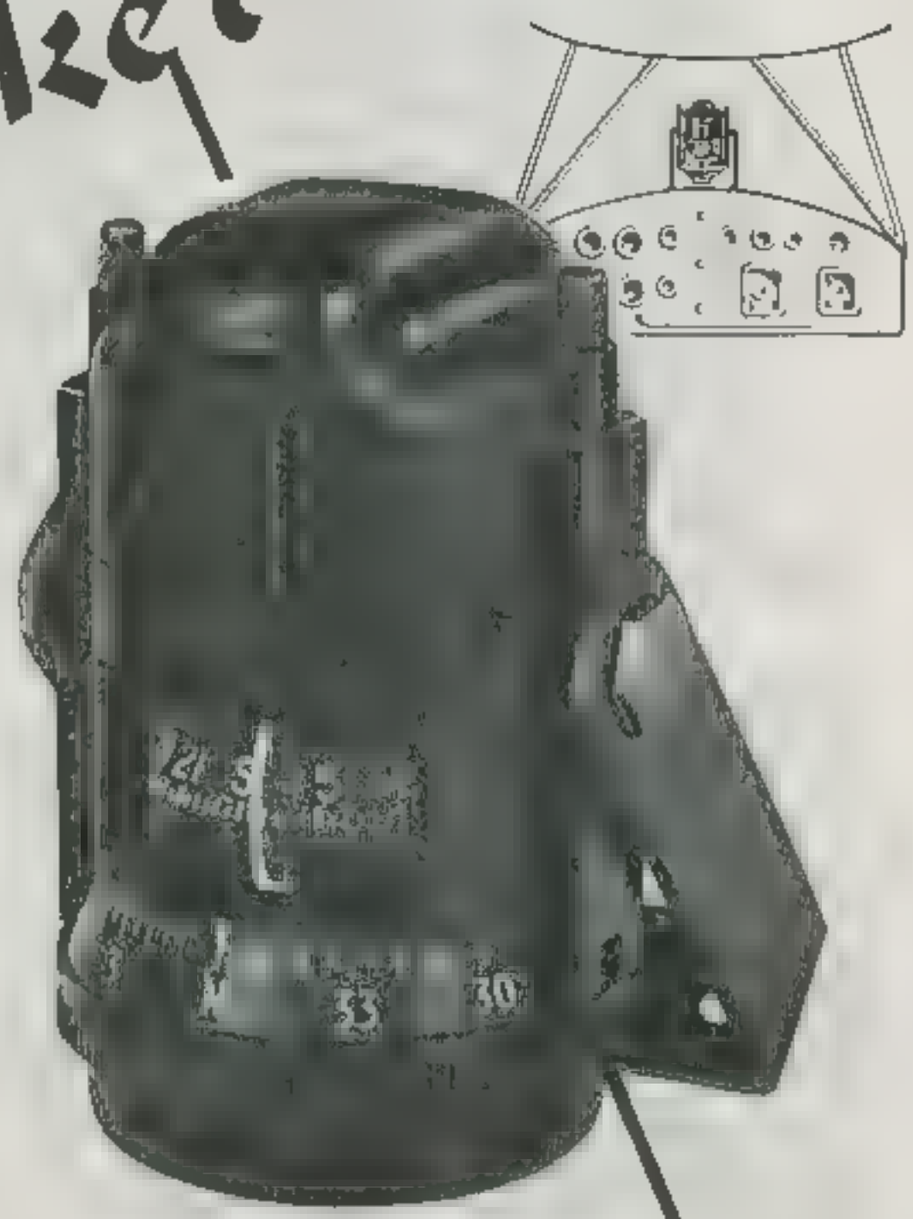
In the Air it's Tel-air T.M. REG

THE TELEOPTIC CO.

1261 MOUND AVENUE RACINE, WISCONSIN

Write for Profusely Illustrated Catalog showing typical Tel-air Parts. It will save you time and money.

SHERRILL COMPASSES lead again with the JOHNSON Rocket 185



...EYE-LEVEL MOUNTING!

...FINGER-TIP COMPENSATION!

Proud owners of the famous Johnson Rocket 185 will enjoy the amazing accuracy of a precision-built, battle-tested Sherrill Compass . . . with "finger-tip compensation" . . . mounted at "eye-level" . . . when their plane is delivered. Aerial combat has proved the efficiency of "eye-level" mounting. Sherrill's patented features give greater accuracy and safety. No special tools or expert help needed for compensation. An illuminated card, course indicator and mid-cardinal point compensation are additional Sherrill features that save flying time and cost. Ask your favorite aviation supply or instrument dealer about this extremely accurate Sherrill compass. If there is no dealer near you, write us direct.

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Investigate the Sherrill Compass Sales Plan!

Write for Details!

...and here's a Sherrill

AUTO COMPASS!

Modeled after Sherrill combat compasses, the standard of our Armed Services. Finger-Tip compensation, accurate.

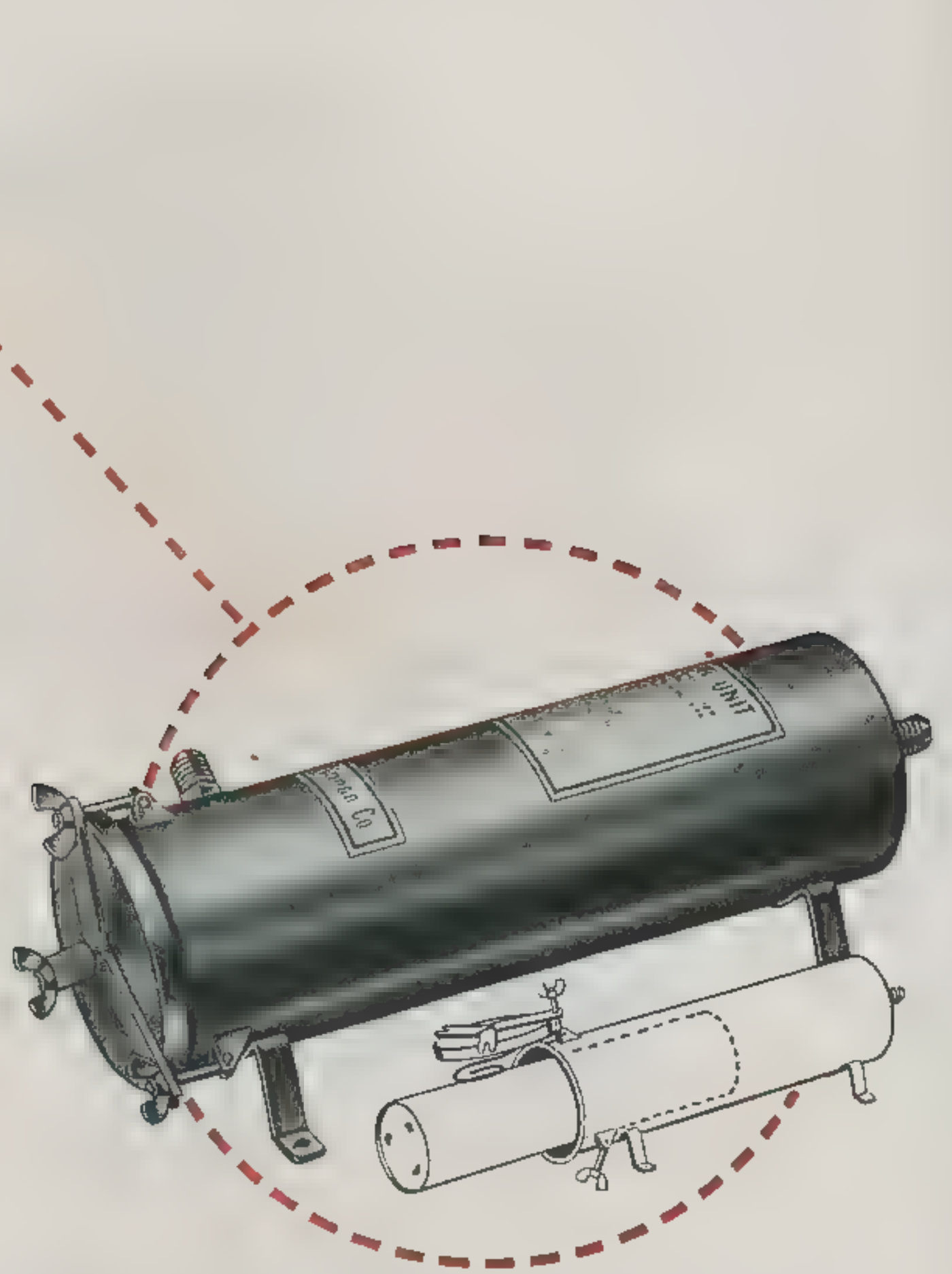
LIST PRICE $2.50

SHERRILL INSTRUMENT COMPANY

A DIVISION OF THE SHERRILL RESEARCH CORPORATION

SHERRILL BUILDING PERU, INDIANA

AIRBORNE DEHYDRATING EQUIPMENT



This D-10 Dehydrator Unit for the B-29 Bomber is just another practical application of the Russell R. Gannon System for the control of moisture content, relative humidity, and dew point of air and gases.

This unit including its dehydrating cartridge weighs but four pounds and has a moisture pick up capacity of 50 grams of water while maintaining a dew point of 90° F below zero.

The Gannon System is applicable to many other dehydrating problems, and usually eliminates expensive and cumbersome installations.

The dehydrating chemicals are so inexpensive to replace as to be expendable at a negligible cost.

Precision tested dew point color change indicators are available to insure accuracy of working conditions.

If you have a dehydrating problem, consult Gannon. Gannon's Engineers welcome your inquiry.

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April 25, 1945

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Mgr. Aircraft Landing Gear Sales
Bendix Products Division
Bendix Aviation Corporation
South Bend 20, Indiana

Dear Mr. Cautley:

Grumman Aircraft wishes to thank you for the support you gave us in establishing five world's records for production.

They are as follows:

1. MOST PLANES OF ONE TYPE IN ONE MONTH
2. MOST COMBAT PLANES IN ONE MONTH
3. 10,000 HELLCATS SINCE PEARL HARBOR
4. HIGHEST RATE OF ACCELERATION
5. SPEED IN INTRODUCING NEW MODEL

We know these accomplishments would have been impossible without your aid.

Very truly yours,
GRUMMAN AIRCRAFT
ENGINEERING CORPORATION

L. A. Swirbul
Executive Vice-President

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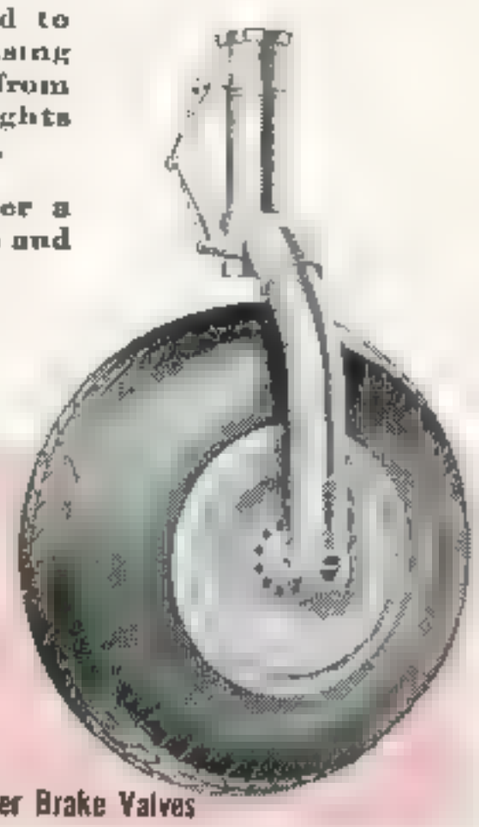
We are happy to have contributed to Grumman's outstanding production records, but we take perhaps even a greater pride in the fact that the inherent quality and design of Bendix* Pneudraulic Shock Struts contribute so importantly to the high performance standards of Grumman and other leading plane manufacturers.

*TRADE MARK

Bendix Pneudraulic Shock Struts

Design is being continually advanced to meet ever increasing impacts resulting from added plane weights and higher speeds.

Shock struts cover a wide range of sizes and weights ranging from less than five pounds to over 900 pounds.



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The knowledge and experience gained from having successfully built and serviced more than 30,000 electronic autopilots for the armed forces have enabled Honeywell engineers to develop and improve an autopilot especially designed for military transport, commercial airline and feeder line use.

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"Automatic Flight, by Honeywell" gives you a complete preview. Send for your free copy today. Aeronautical Division, Minneapolis-Honeywell Regulator Co., 2792 Fourth Avenue South, Minneapolis 8, Minnesota.

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MAKERS OF THE FAMOUS M-H ELECTRONIC AUTOPILOT, USED ON AAF FOUR-ENGINED BOMBERS

What is a Shock Mount Worth?

LIVES DEPEND UPON airborne radio and electronic equipment. Yet the record shows that this type of equipment has failed repeatedly in aircraft because the shock mounts have been ineffective under severe service conditions. Well designed instruments have been literally shaken to pieces, failing to deliver performance and service life built into them. Tubes which should last hundreds of hours have failed in 5 to 10 hours. The vibration control was not adequate for the valuable equipment it was supporting.

SHOCK MOUNTS RESPONSIBLE FOR SUCH FAILURES ARE EXPENSIVE AT ANY PRICE. WHEN BALANCED AGAINST THE FAILURE OF A COMBAT MISSION, OR THE POSSIBLE LOSS OF AN AIR CREW.

The answer to this problem is available through an entirely new principle of vibration control and shock absorption. Through the use of the Robinson Vibrashock* suspension principle, any airborne equipment can be protected better than ever before thought possible. Vibrashock suspensions are tailor-made for each type of equipment, and are guaranteed to absorb over 90% of all vibration within the aircraft operating range.

Service reports reveal that the over-all efficiency and service life of equipment supported by Vibrashock have been greatly increased through reduction of operational failures and difficulties.

SUCH MOUNTS, CAPABLE OF PROTECTING VITAL EQUIPMENT THROUGH THE MOST ARDUOUS COMBAT CONDITIONS, ARE PRICELESS IN TERMS OF RESULTS.

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The C-46 CURTISS-WRIGHT COMMANDO TRANSPORT is equipped with this Carlson-processed cowl flap actuating cylinder.

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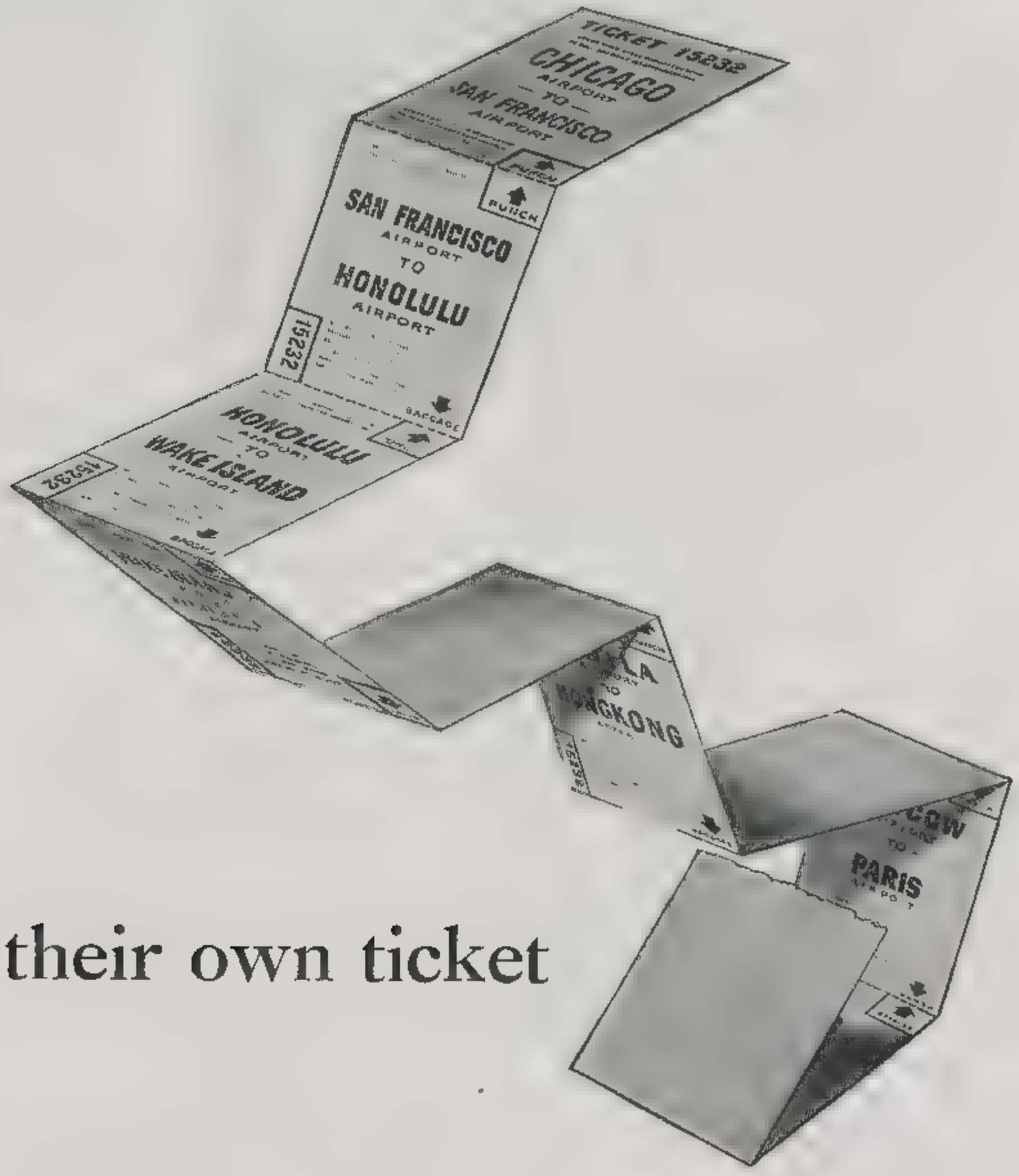

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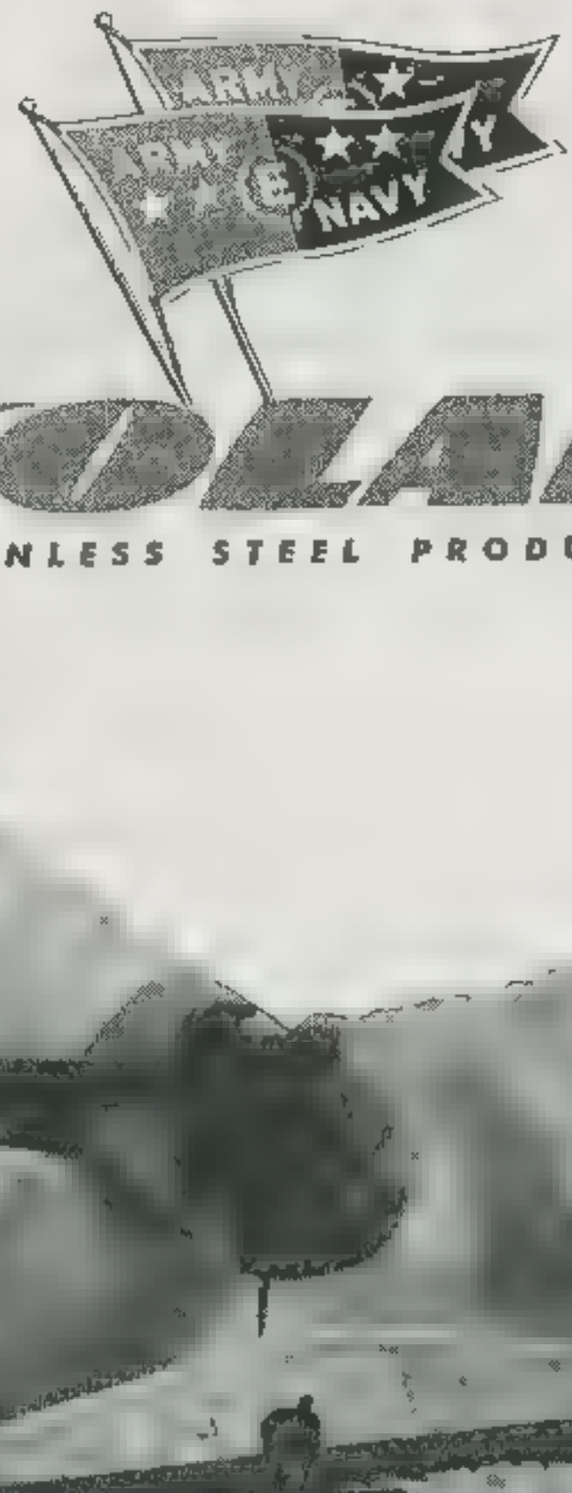
After victory, these skills which are now being devoted to production for the aviation industry, will be available to other manufacturers whose problems deal with fabricating heat and corrosion resistant products.



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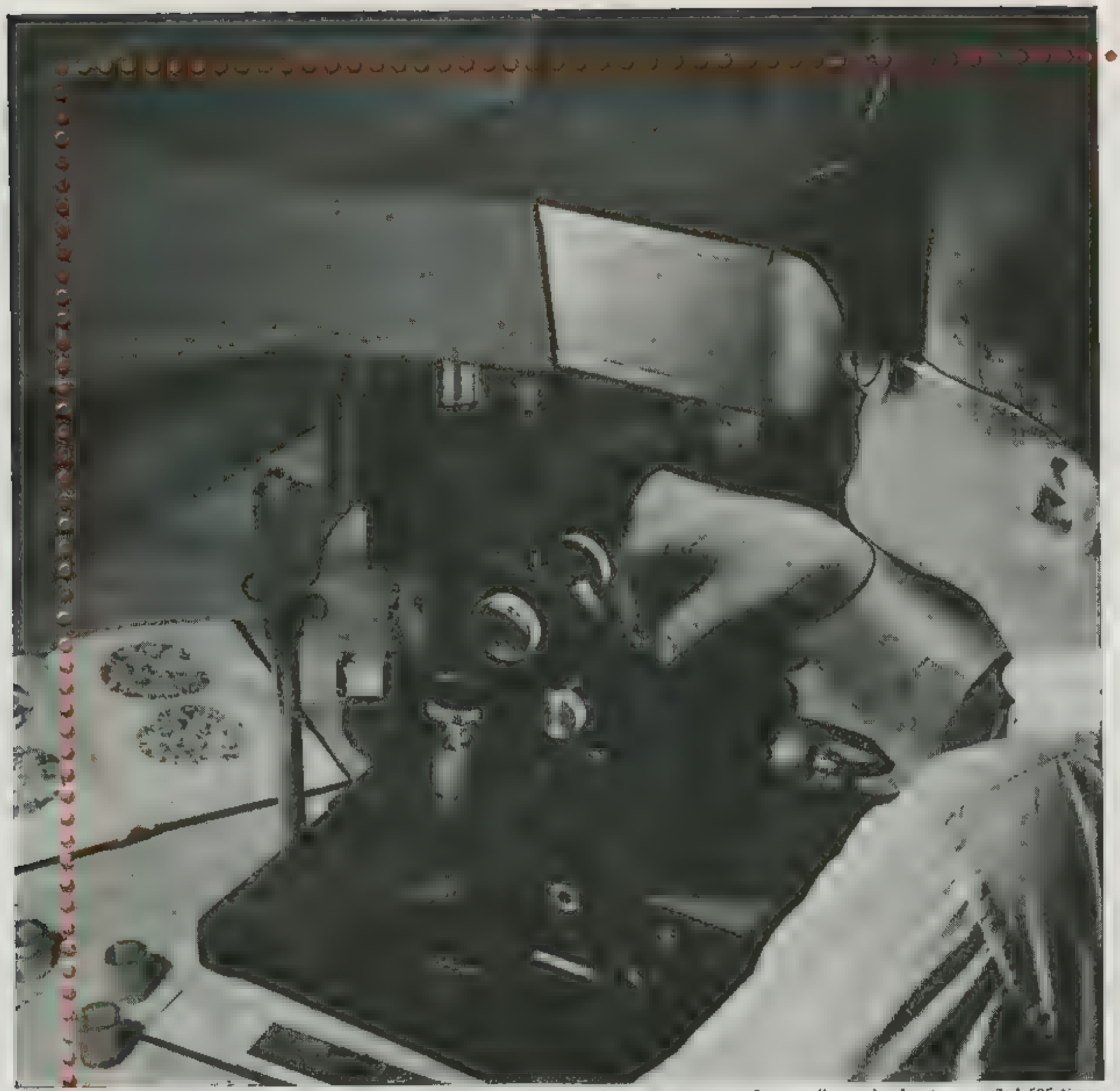

Investigating the grain structure of a metallurgical subject, magnified 585 times.

Arming radio for war

MODERN GLOBAL WARFARE has subjected radio communication equipment to hitherto unheard-of forms of punishment. Not the least of these are extremes of shock and vibration, the enormous acceleration of high-powered aircraft take offs and the abrupt deceleration of carrier landings.

Such service requires not only a high degree of excellence in design and fabrication, but also an infinite amount of research in the field of available materials and their behavior under varying conditions.

Collins chemical and metallurgical research has played a very important part in developing the Collins communication transmitters and receivers which have proved so trustworthy in Military service. The result of continuing research will be reflected in the Collins equipment available to commercial users after the war. Collins Radio Company, Cedar Rapids, Iowa; 11 West 42nd Street, New York 18, N. Y.

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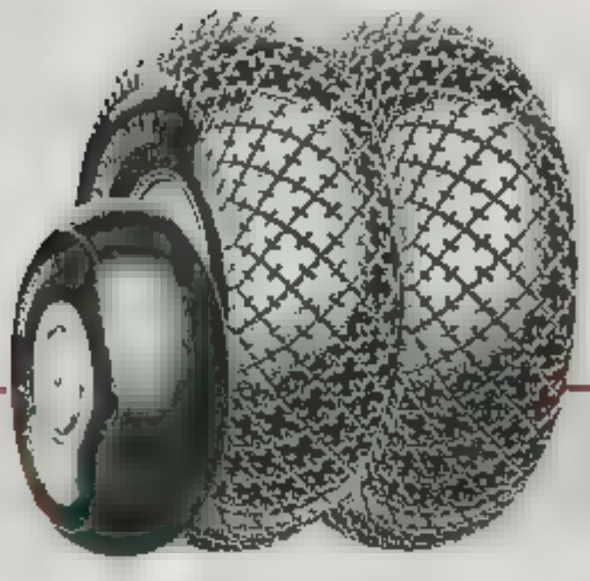

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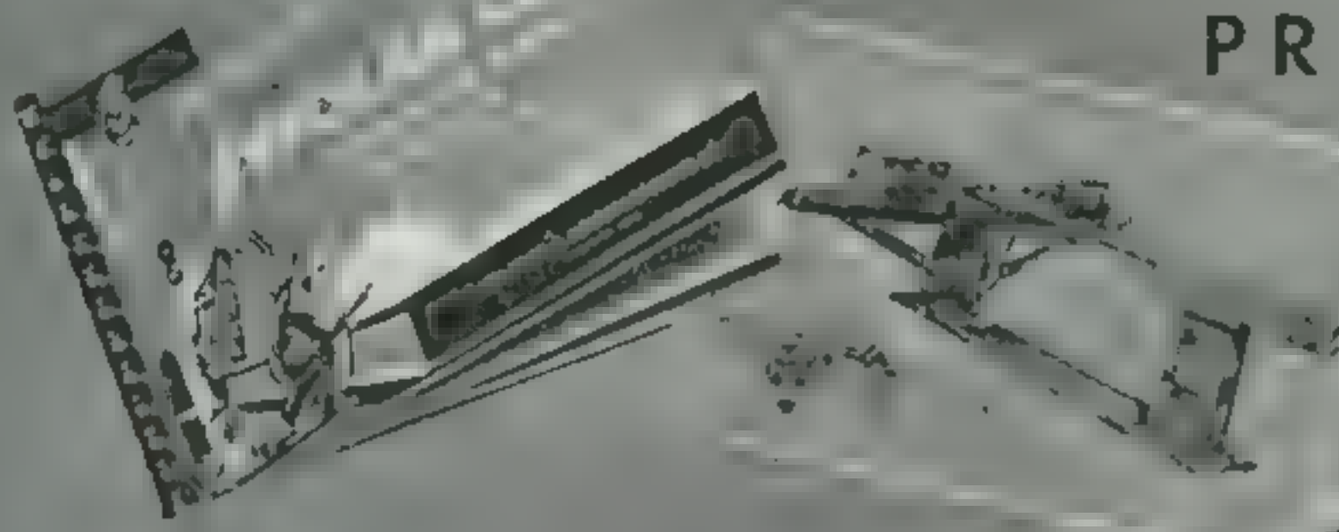

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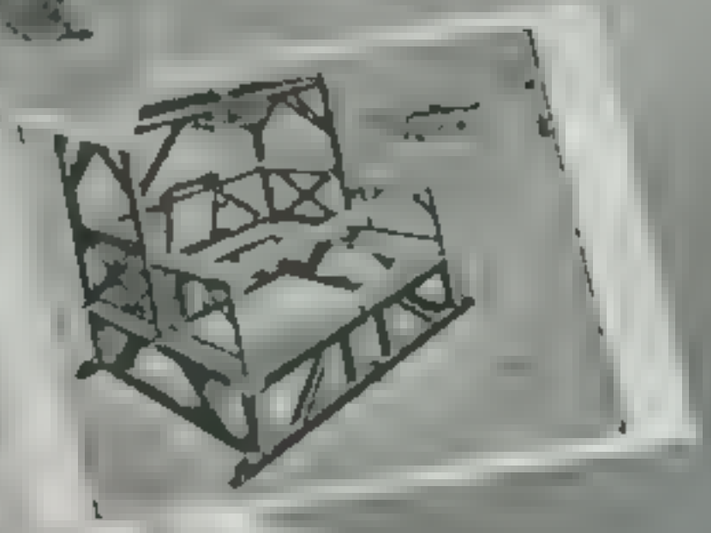

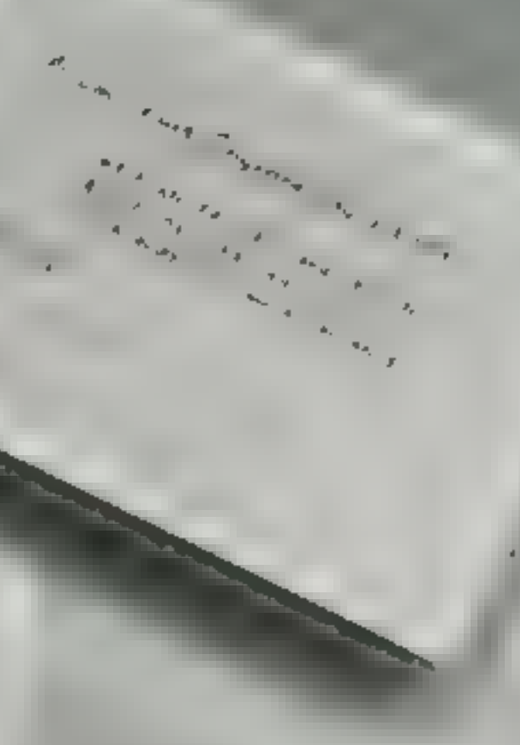

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Send today for your FREE copy of "Report from AeroJet"—a factual story of immediate and vital interest to everyone in aviation.

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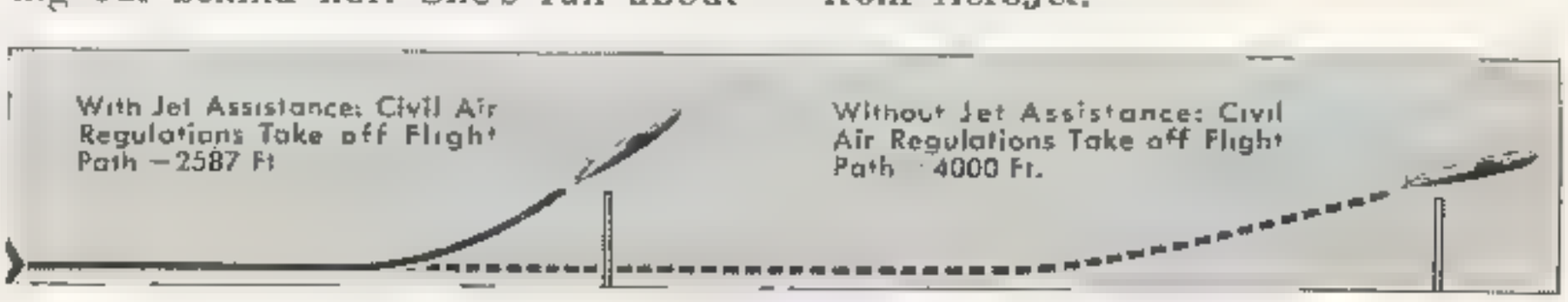
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From the tiniest screw to the largest sizes, accuracy and uniformity are maintained through "National's" methods of manufacture and thorough inspection. Furnished in many grades of ferrous and nonferrous metals, e.g., carbon steels, stainless steels, brass or bronze.

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FOUNDED IN 1926, Breeze Corporations was a vital factor in the development of clearer communications for commercial, as well as military aviation. The Breeze pre-war reputation as a manufacturer of such precision items as Radio Ignition Shielding, Flexible Conduit and Electrical Connectors, was further enhanced during the war years by the performance of these products and of Breeze Cartridge Engine Starters, Tab Controls, Armor Plate and countless other Breeze specialties — all of which made marked contributions to the winning of Final Victory.

Now that the war has been won, Breeze turns once again to production for peace confident that the products, which made the Breeze Mark the symbol of superiority the world over, will pace the progress of communications and transportation in the coming era of electronics.

BREEZE

Corporations Inc.

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Ready: Collins Transmitters for airport applications

Collins Autotune Transmitters

IN DESIGN AND CONSTRUCTION the Collins Autotune transmitters, shown below, reflect extensive laboratory and field research, and intense engineering endeavor, both before and since Pearl Harbor. The most advanced refinements are combined with military ruggedness on a production line basis!

The Collins Autotune is a repositioning mechanism which quick-shifts all tuning controls simultaneously and with extreme precision to any one of ten preselected frequencies at the flip of a dial, either at the transmitter or from a remote point. The standard models are crystal controlled, and special models are available with tunable master oscillator control.

The renowned Collins pi network matches into a wide variety of single wire or vertical antennas. The 231D-13 also matches into a 600 ohm balanced transmission line from 4 to 18 Mc.

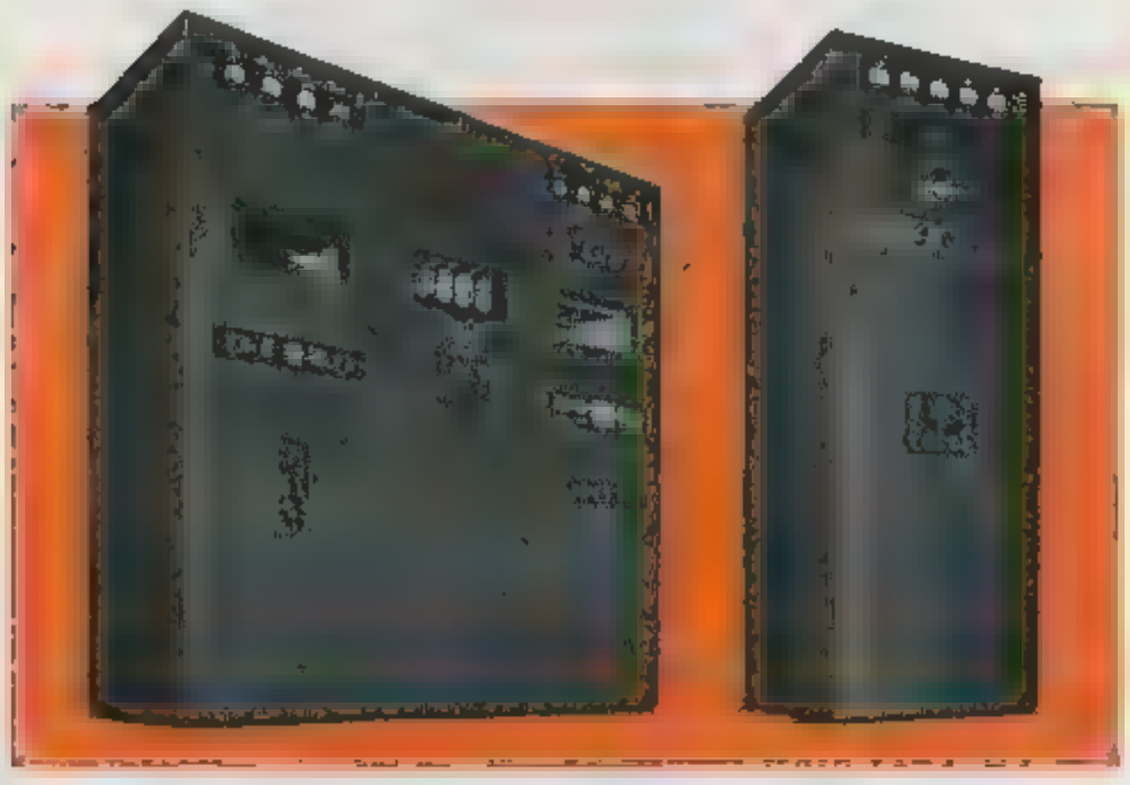
Frequency-shift keying is available, making it possible to use these transmitters in printing telegraph circuits.

Collins Multi-channel Transmitters

THE COLLINS 1000-C 2500 watt multi-channel airport transmitter shown at right, below, provides an ingenious balance of quality, efficiency and economy. The radio frequency cabinet contains two vertical r.f. sections. Each section can be used interchangeably on two channels located anywhere within 2 to 20 Mc. The cost per section compares with that of conventional single channel sections. The cost per channel is thus cut approximately in half. In addition, relays permit selection of three crystals per channel (six per vertical section). Twelve frequencies are therefore available in a single cabinet.

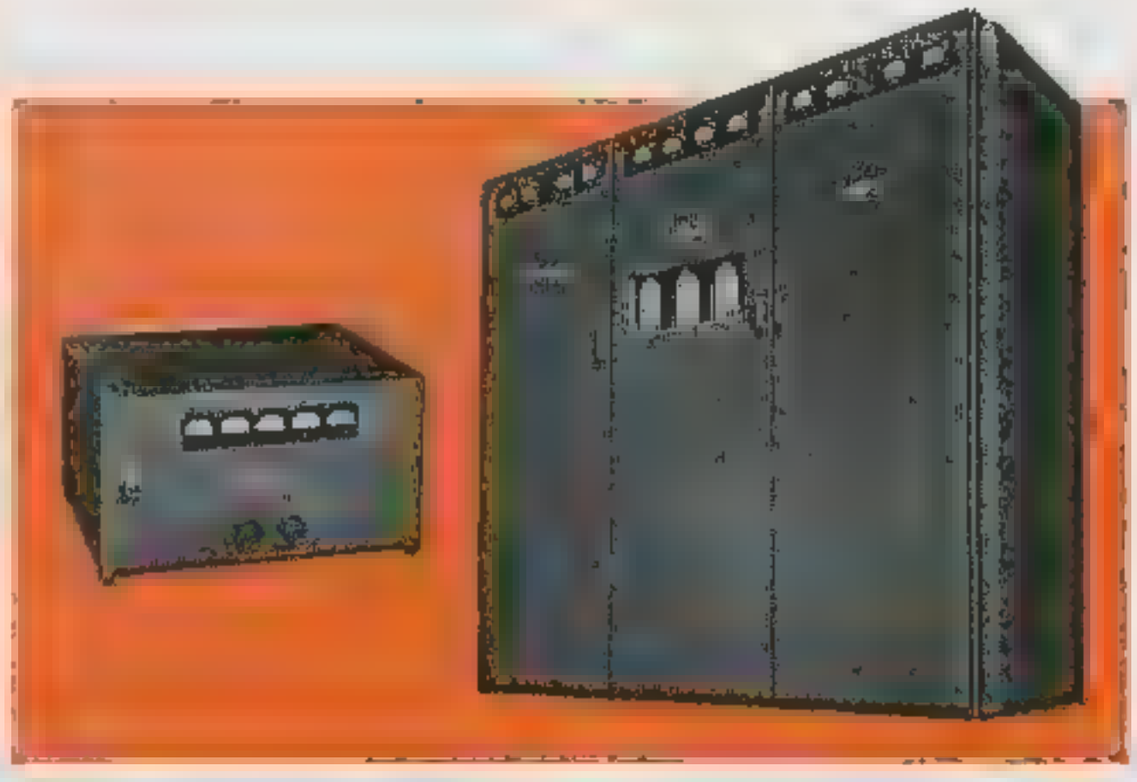
The Collins 32RA transmitter shown at left, below, is a compact low-powered crystal controlled unit which finds ready application for continuous duty in control towers, or as a stand-by. Instant selection of any one of four frequencies within its range is accomplished by means of a special gang switch actuated by a single panel control.

Your inquiry is invited. We will be glad to make recommendations for your particular applications.



Collins 231D-13—Nominal power output: 3000 watts phone, 5000 watts c.w. Frequency range: 2 to 18 Mc. Ten quick-shift frequencies.

Collins 16F-9—Nominal power output. 300 watts phone; 500 watts c.w. Frequency range. 2 to 18 Mc. Ten quick-shift frequencies.



Collins 32RA—Nominal power output. 50 watts phone, 75 watts c.w. Frequency range: 1.5 to 15 Mc. Four instantly selected frequencies.

Collins 1000-C—Nominal power output: 2500 watts. Frequency range 2 to 20 Mc. Additional a.f.-modulator & r f. multi-channel sections available.

COLLINS RADIO COMPANY, CEDAR RAPIDS, IOWA; 11 W. 42nd ST., NEW YORK 18, N. Y.

Collins equipment is sold in Canada by Collins-Fisher, Ltd., Montreal.

IN RADIO COMMUNICATIONS, IT'S . . . COLLINS

CONTINENTAL DIAMOND ENGINEERED *Plastic Materials*

The part illustrated is an airborne radio insulating part . . . made from grade "L" DILECTO . . . a laminated phenolic plastic. It was sawed, milled, drilled, countersunk and tapped. Tolerance requirements were close. DILECTO parts such as this one will be widely used in all branches of air transportation.

Here is a strong, tough plastic . . . with high electrical insulating properties that remain stable under extremes of temperature and humidity. DILECTO is readily fabricated on ordinary metal working tools. It is NON-corrosive and highly resistant to many chemicals.

This versatile plastic may be the answer to your "What Material?" problem. C-D technicians will be glad to help you find out. Their wealth of "Know-How," the result of a half century of service to industry, makes available to you thousands of case histories of solved design and operational problems.

■

KG-45

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CELORON—A Molded Phenolic.
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to be used by

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The installation of Simmonds Pacitor Fuel Gauges on a fleet of 50 Douglas C-54 transports recently acquired by American Airlines, marks the introduction of an advanced electronic fuel measuring system to domestic airline operation. Simultaneously, these instruments have been specified for the giant Douglas DC-6's being built for commercial use.

The basic principle of the Pacitor Gauge makes use of a change of the electrical capacity of a condenser (tank unit) when the dielectric changes from liquid to air, these changes being measured electronically and recorded on the cockpit indicator. A totalized reading, rather than one dependent only on a liquid level, is achieved despite changes in flight attitude or temperature. The Pacitor Gauge has no moving parts except the indicator pointer in the dial, thus requiring a minimum of servicing. It gives greater accuracy and reliability than float-type or conventional gauges, and is easily adapted to any type of aircraft. For illustrated literature or further information, write the Simmonds office nearest you.

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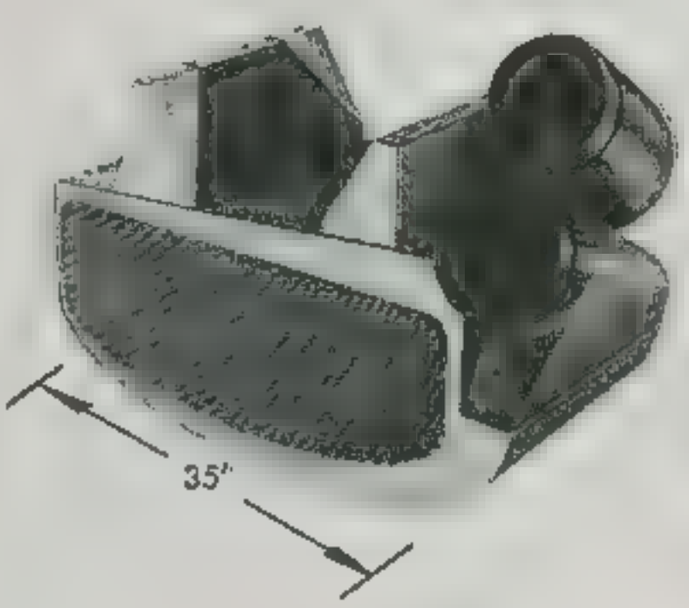
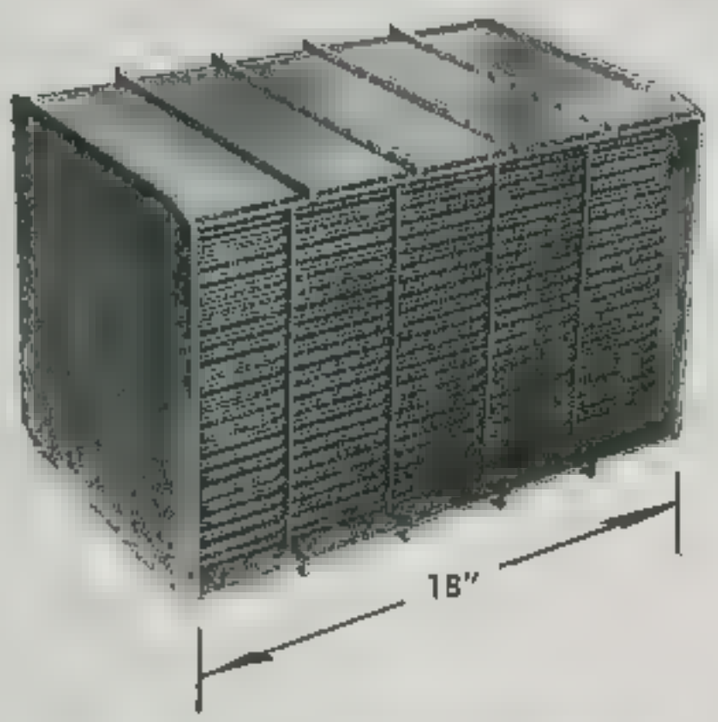
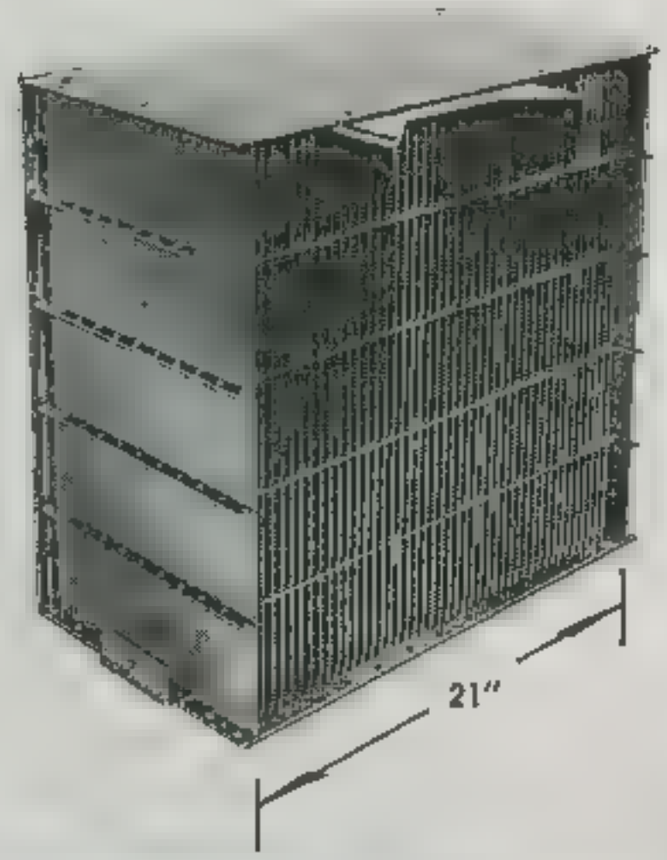
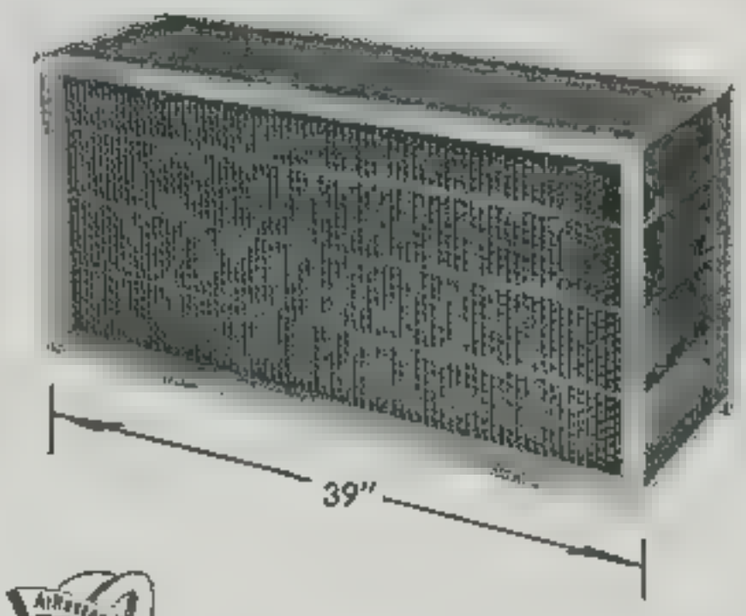








1,000,000 HOURS of combat performance already logged for AiResearch Intercoolers

THE *ONLY* COMPANY THAT CAN CLAIM SUCH A RECORD OF SERVICE

AiResearch is manufacturing supercharger Intercooler units for the P-38, the P-61, the B-17 and the B-29. These ships alone have logged well over a million combat hours, all trouble-free insofar as AiResearch Intercoolers are concerned. And AiResearch has designed and built numerous other models equally successful.

AiResearch designed the *first* mechanically assembled all-aluminum, corrosion-resisting Intercooler successfully put on a production line basis. The tubes are jig assembled and mechanically fastened for accurate control of dimensions. This method helps make them mechanically strong enough to withstand terrific back pressure.

Both round and flattened tube Intercoolers are standard products of AiResearch. The company's latest development is a flattened-dimpled tube unit used on the B-29, which has shown a remarkable increase in effectiveness and as much as a 40% reduction in cooling drag. Weight has been continually decreased. Intercoolers today weigh 30% less than earlier models.

These Intercoolers are tested in the AiResearch Laboratories under actual conditions of heat, cold and altitude. Lab performance and actual performance have been remarkably near the same. This experience in designing, testing and manufacture is available to other aircraft manufacturers and engineers who have an intercooling problem needing solution.

AiResearch — manufacturers of AIR CONTROL equipment
Cabin Pressure Regulating Systems • Engine Oil Cooling Systems • Supercharger Aftercooling Systems • Temperature Control Systems • Engine Intercooling Systems • Automatic Exit Flap Control Systems.

AiResearch MANUFACTURING COMPANY
LOS ANGELES • PHOENIX
A DIVISION OF THE GARRETT CORPORATION

...Thanks to our G-E Two-Way Plane Radio

A week-end with the family, vacations in the tropics, shopping in New York, Cleveland, or Dallas—that, Mr. and Mrs. Flyer, is your dream come true.

There's no telling exactly what your future plane will look like, but of this we can be sure. It will be safer, more economical, easier to fly than you ever dreamed. And G-E Electronic Aviation Equipment will add immeasurably to your flying pleasure. For example, courses and positions on cross-country flights will be easy to determine with your G-E personal plane radio. Radio beams—your sign posts of the air—will interlace the sky from every point of the compass. Merely choose your destination and let your plane radio guide you—unerringly, every second of flight.

As in your car today, radio will be standard equipment in your future plane. Your G-E personal plane radio will be compact, light in weight, simple to operate. And it will be reasonable in cost.

For your convenience and entertainment, fly your own plane tomorrow with G-E Electronic Aviation Equipment. Leading personal plane manufacturers will use G-E 2-way radio in their new models. *Electronics Department, General Electric Company, Schenectady 5, N. Y.*

The G-E monogram flies in *all* U. S. Army and Navy Aircraft

GENERAL ELECTRIC

Leaders all—

These Men in Industry . . .

E·L in Current Conversion

These, and many other industrial leaders, anticipate improvements in their postwar equipment which will require current conversion. Vibrator Power Supplies lead the field in current conversion because of their efficiency, versatility, ease of maintenance, and flexibility in size and weight.

Specializing in design and production, Electronic Laboratories, the world's largest manufacturer of Vibrator Power Supplies, has pioneered and perfected many exclusive developments such as multiple input and output, constant output voltage systems, and heavy duty units with capacities up to 1000 watts.

Wherever current must be changed in voltage, frequency or type—especially DC to AC, for which there is an ever increasing demand—consider an E-L Vibrator Power Supply first Consult with E-L engineers on *your* current conversion needs.

Electronic **LABORATORIES INC.**

INDIANAPOLIS

VIBRATOR POWER SUPPLIES FOR LIGHTING COMMUNICATIONS AND ELECTRIC MOTOR OPERATION · ELECTRIC ELECTRONIC AND OTHER EQUIPMENT

VIBRASHOCK* licks a TOUGH problem

Fighter plane firing involves a gun platform, and an enemy target, each moving at speeds around 400 miles an hour. It is no easy task to see and remember what and where hits are made. So, an automatic gun camera keeps the record.

Gun cameras are subject to severe vibration and shock from the recoil of 50 caliber machine guns. This has presented a tough problem which has now been solved by Robinson engineers. At the request of the U. S. Navy, they designed and built a camera mount incorporating the famous Robinson principle of vibration control. These mounts will be installed in Navy fighter planes.

Now, clear photographs will keep the records straight on the results obtained by our fighter pilots. In addition, these vibration-free photographs will assist in instructing new pilots to improve their marksmanship and teach them the latest techniques before they go into battle.

This gun camera mount achievement is a vivid example of the adaptability of the Robinson principle of vibration control to unique vibration problems. Previously Robinson Vibrashock suspensions have been adapted to airborne instruments, electronic equipment, radios and instrument panels. If you have a vibration problem, let Robinson engineers help you solve it.

*Trade Mark

ROBINSON AVIATION, INC.

730 Fifth Avenue, New York 19, N. Y.
First National Building, Hollywood 28, Calif.

Superior Engineering . . . basis of Collins quality leadership

Above all, the Collins Radio Company is an engineering outfit. 4.4% of the organization's entire personnel are graduate engineers.

They came to Collins because the Collins progressiveness and quality standards are their own ideals, and brought with them successful experience in both radio and allied electronic fields. They are the nucleus of the organization, from management on through.

These men determine and uphold the character of Collins radio communication equipment from inception, through all stages of research, design, production, quality control, field test and field service.

Aviation can look with confidence to Collins for the best available performance in air borne and ground station radio communication equipment. We will welcome an opportunity to consult you regarding your requirements.

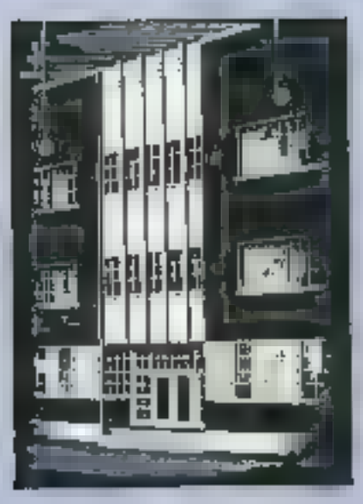
COLLINS RADIO COMPANY
Cedar Rapids, Iowa
11 W. 42nd Street, New York 18, N. Y.

IN RADIO COMMUNICATIONS, IT'S . . . COLLINS

engineers and builders of

oil hydraulic equipment

Since 1921



Vickers has been developing, improving and manufacturing oil hydraulic equipment since 1921 . . . five years before Lindbergh flew the Atlantic. In the 24 years that we have been building and applying hydraulic pumps and controls, our organization has accumulated a background of experience that has been invaluable in reaching the correct solution to many difficult problems in aircraft hydraulics.

Today, Vickers has the most extensive line of aircraft hydraulic pumps and controls . . . is the country's largest builder of precision oil hydraulic equipment.

Vickers Incorporated is entirely American-owned and has never been a subsidiary of, or associated with, any foreign company.

"Hydraulics" has been our business since long before the war began . . . it will continue to be our principal business.

VICKERS Incorporated

1404 OAKMAN BLVD., DETROIT 31, MICH.

B-25 Airliners

The modification of five B-25J *Mitchell* bombers into fast transports for high-ranking military personnel, by North American Aviation, has aroused considerable interest in respect to the commercial utilization of surplus military aircraft.

The modification consists solely of changes in the interior of the airplane. A standard *Mitchell* is stripped of all armament, armor plate, radio, and miscellaneous military equipment. In their places are installed a nose section which contains all radio equipment, heating and ventilation apparatus; sound-proofing, double windows and furnishings; baggage section, lavatory, sleeping compartment and passenger cabin.

▸ **Six Seats** — The resulting transport will carry six passengers with a crew of two. Range is approximately 2,000 miles at a speed of 265 mph. at 10,000-ft. With passengers and crew, plus 900-lbs. of baggage, the airplane weighs 28,200-lbs.

One of the main points in favor of the conversion is a simplified maintenance and supply problem. The transport uses standard B-25 parts which are in abundant supply.

Continuous Flow Fuel System Set For Army

A continuous flow fuel system, replacing fuel tank selector valves, will be installed in all military aircraft, according to Air Technical Service Command.

The new system, developed at Wright Field by ATSC engineers, is said to eliminate practically all chance of accidents arising from the older method of manually switching from one tank to another.

▸ **Float Valve**—Based on a simple arrangement of fuel lines and the use of a float-operated valve, the system provides a continuous flow of fuel without change in pressure.

Formerly, a pilot had to switch a fuel tank selector valve to the main tanks at takeoff, then change over to auxiliary tanks during flight and, when those were empty, switch back to main tanks. This procedure allowed a great chance for human error. The ATSC development, being fully automatic, does not require operation by the pilot.

Scott

MASTER CYLINDERS

MODELS 4000 and 4100

SPECIFY AS Standard

Note the vertical position in which the Scott Master Cylinder becomes the back link of the parallelogram resulting in greatly simplified installation and maintenance.

● Designers and engineers welcome the patented Scott Master Cylinder, a highly efficient pressure generating device for use with aircraft hydraulic brake systems. Available in two sizes with displacements of .38 cubic inch and 1.2 cubic inch. Built for pressures up to 1200 lbs., with design operating pressure of 650 lbs. when installed as illustrated. Adjustable in length, both sizes are interchangeable. No internal valves or small ports to score piston. Reservoir built-in—not external. Easy to bleed. Throughout, a dependable Scott quality-built product—one which you can "specify as Standard" with complete confidence.

Established 1932

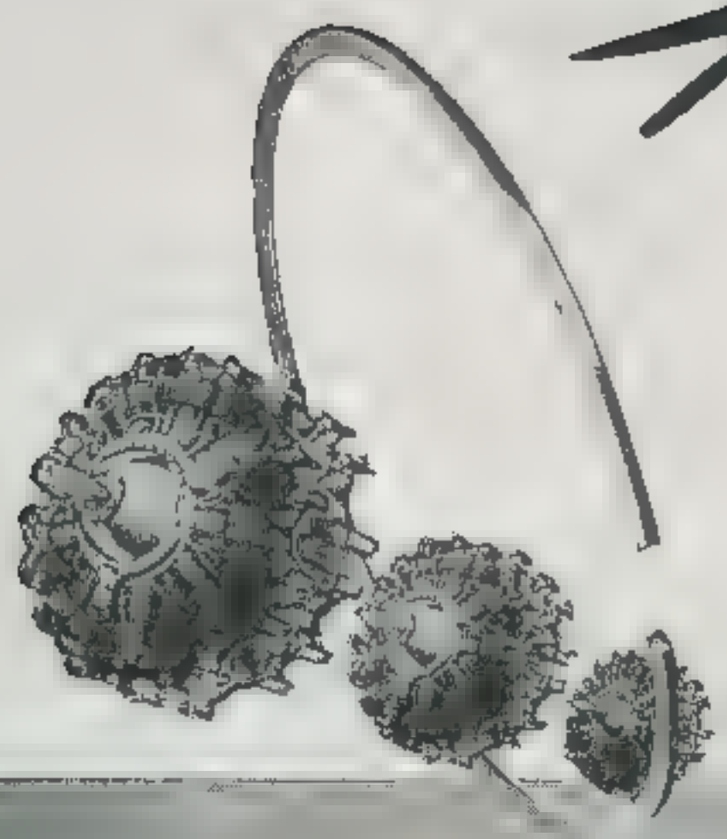
Scott

AVIATION CORPORATION

204 ERIE STREET
LANCASTER
NEW YORK

KOPPERS

and *Aviation*



KOPPERS GIVES RINGS "POROUS" CHROME PLATING

To cut down friction, many piston rings are chrome plated. But most chrome plating gives a dense, solid, impervious surface which leaves no pores to hold the tiny oil reservoirs so necessary to efficient operation. With the patented "PORUS-KROME"* process, Koppers gives aviation rings a harder-than-steel chromium plating which still has pores and still can hold oil to keep the cylinder wall lubricated.

*Van der Horst Process

"TARMAC" CHOSEN FOR AIRPORT PAVING

For years, Tarmac has been a familiar friend and stand-by to thousands of highway officials who know it for the skid-resistant, long-wearing, economical highway surfaces it builds. To airport officials, it is proving just as valuable for runways, aprons, flooring, parking areas and approach roads.

KOPPERS COMPANY, INC., PITTSBURGH 19, PA.

KOPPERS

THE INDUSTRY THAT SERVES ALL INDUSTRY

AVIATION TIDEWATER STRUCTURES

This Pan-American landing dock and many other aviation structures are built with wood pressure-treated to resist decay and the attacks of marine borers and termites. Koppers Wood Preserving Division pressure-treats wood for this and other purposes.

Buy War Bonds . . . And Keep Them

Sign of the Times

So you're going to operate an air taxi! Well, it may not be long, now . . . you'll put the finishing touches on the sign over the office door, insert your first ad in the daily paper, and take up a strategic position by the telephone to greet your first customer.

But in planning and working for this big moment, you will have faced three paramount requirements of successful operation: safety in flight operation and navigation, economy of operation, and ability to render around-the-clock, around-the-calendar service to the public.

You will find the answer to these requirements in high quality instrumentation — *complete* instrumentation. And it is in this phase of commercial aircraft operation that Kollsman can serve you. Kollsman Aircraft Instruments have played a vital part in the success of the nation's airlines since their earliest days.

Whatever your operation is to be, Kollsman accuracy and dependability can be one of your greatest assets, too!

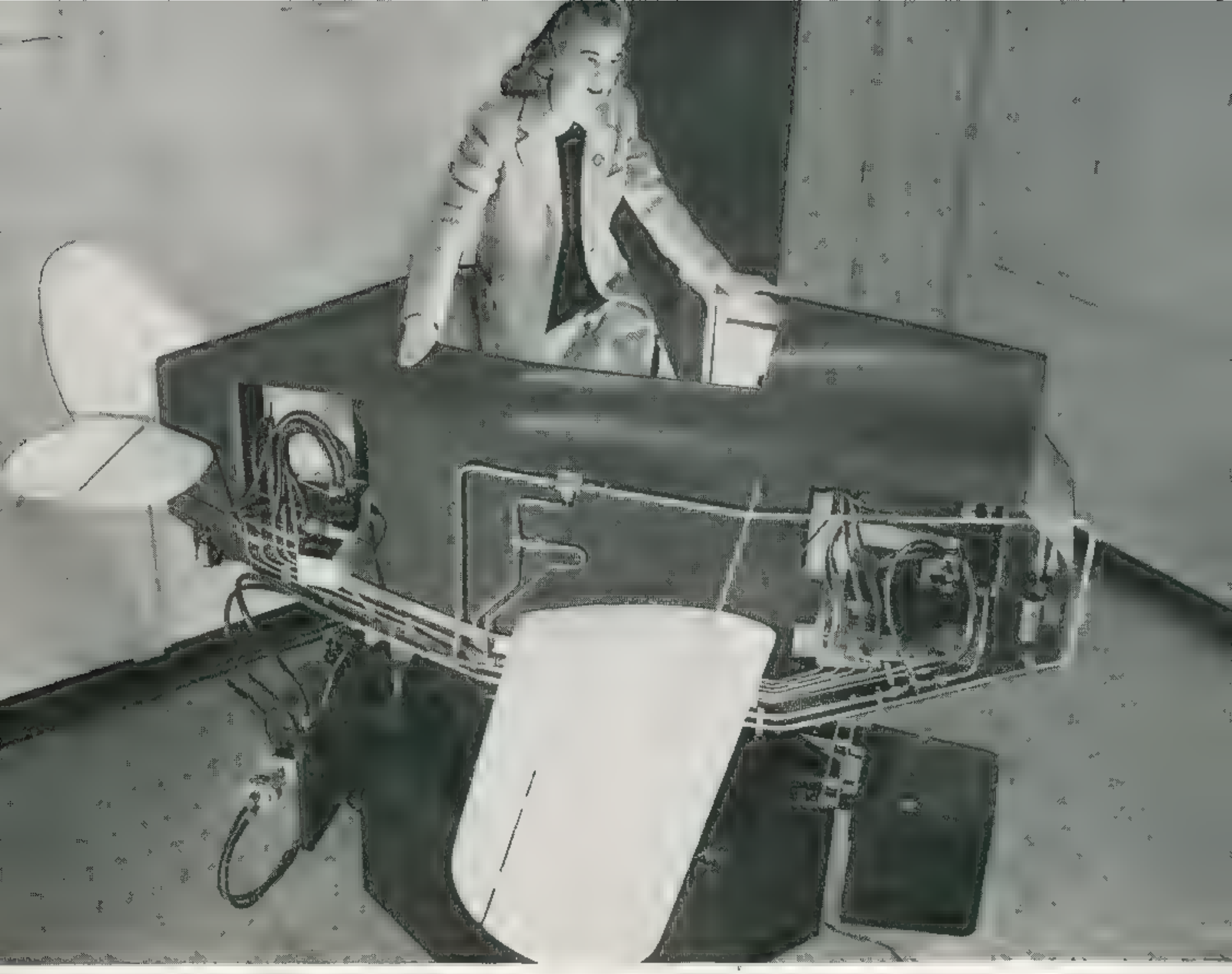
Write today for our interesting and informative booklet "Facts About Kollsman Aircraft Instruments." Kollsman Instrument Division, Square D Company, 80-20 45th Ave., Elmhurst, New York.

KOLLSMAN AIRCRAFT INSTRUMENTS

PRODUCT OF

SQUARE D COMPANY

ELMHURST, NEW YORK • GLENDALE, CALIFORNIA



Date with an Autopilot

THIS young lady is about to "take off" with the G-E Autopilot in a Link Trainer—a decided contrast to the usual assignment of the Autopilot, torpedo bombing. The trainer is a means whereby a person can match wits with this automatic pilot—and lose. Why? Because the pilot detects the slightest variation from course, and firmly corrects it.

The "brains" of the Autopilot consist of electrically driven gyros that are responsible for its stable, highly accurate performance, even at high altitudes. The Autopilot embodies features greatly desired in all aircraft systems—light weight, first-rate performance at all altitudes, sturdiness, and long-lived dependability.

G-E aircraft products, from the smallest instrument to the turbosupercharger and gas turbine, are used extensively by the Air Forces. Many of these G-E developments—the Autopilot for one—will someday be available for commercial aviation. We suggest you watch their wartime performance to gain some idea of the way our extensive facilities can be co-ordinated to produce specialized equipment. Our engineering service is also available at all times to meet the needs of the aircraft industry. *General Electric Company, Schenectady 5, N. Y.*

PRECISION PRODUCTS
AND
ENGINEERED SYSTEMS
FOR AIRCRAFT

BUY WAR BONDS as your stake in America's future.

GENERAL ELECTRIC

274 37 8872

CABIN TEMPERATURE CONTROL—

A new electronic system, which controls cabin temperatures with extreme accuracy, has been applied to both steam and combustion type aircraft heaters. Three temperature sensitive elements in the system keep the cabin air at the selected temperature by maintaining the heat supply equal to heat losses. Overshooting is prevented by accurate control of heater discharge temperature

ENGINE TEMPERATURE CONTROL—

Increased operating economy and longer engine life is assured by automatic engine temperature regulation The Honeywell control system, which can be applied to either electric or hydraulic actuators, maintains cylinder head temperatures on one or more engines within a few degrees of the temperature selector setting Because of its small size and proximity to the combustion chamber, the temperature sensitive element, responds accurately and quickly to temperature changes

VALVES AND SWITCHES—

Many aircraft control problems require only the use of electric valves or pressure operated switches Honeywell valves and switches are scientifically designed for maximum dependability and minimum weight. Typical units are the Altitude Warning Signal Switch, which sounds an alarm when the pressure in a pressurized cabin drops below a safe minimum, and the two solenoid valves for heater control illustrated here

Honeywell *Controls*

FOR TOMORROW'S AIRCRAFT

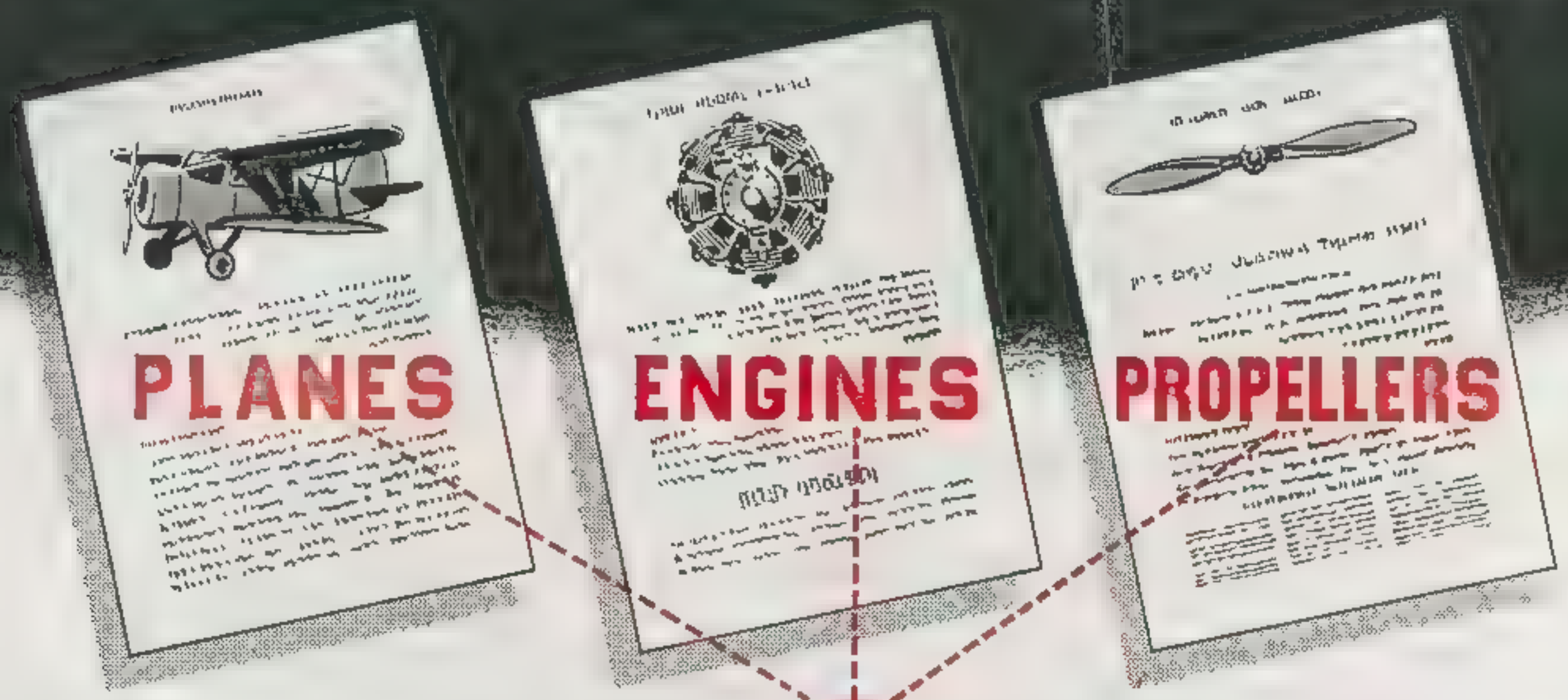
TODAY we can point with pride to the creative engineering by Honeywell which helped produce Allied air supremacy and resulted in decisive victory. Tomorrow, this same creative engineering will help to improve performance of all types of aircraft. Even now it is helping aircraft designers and manufacturers with any and all problems. The Honeywell program includes a complete flight research department, test aircraft, and thousands of dollars worth of testing equipment. In addition, trained application engineers, with broad experience in the use of aeronautical and industrial controls, will collaborate with aircraft manufacturers and airlines in developing the most practical equipment for each specific problem. Their work includes consulting service and flight testing at the customer's plant. These men can help you in the application of Honeywell equipment to your control problems Minneapolis-Honeywell Regulator Company — Aeronautical Division, 2947 Fourth Ave. S., Minneapolis 8, Minn.

CREATIVE ENGINEERING

Makers of the famous M-H Electronic Autopilot used on AAF four-engined bombers

MINNEAPOLIS Honeywell CONTROL SYSTEMS

Now! Manufacturers Can List Parts and Parts Distributors for



Plane, Engine and Propeller Manufacturers, whose parts distribution and maintenance facilities at airports and fixed bases are most widely and quickly accessible to private flying (plane owners) as aviation approaches the future and postwar period, will provide a distinct advantage for those who sell and service their planes. List your parts and parts distributors in Aerolog.

AEROLOG

Will Be Placed in Every Airport And Flying Field in The U. S. A., CANADA and MEXICO

Aerolog is the Only Exclusive DIRECTORY OF PLANE, ENGINE AND PROPELLER PARTS. Carries photographs, basic data and parts drawings; complete parts lists and ordering information; list of official parts distributors for all Planes, Engines and Propellers described in the book. Not a catalog; carries no display advertisements. Now, every airport and flying field operator in the U.S.A., Canada and Mexico can quickly locate his nearest distributor of parts for any plane.

FOR SPACE RATES, RESERVATIONS AND COMPLETE INFORMATION ADDRESS

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THE STECK COMPANY

AUSTIN, TEXAS

FLIGHT-LIKE INDICATION is the characteristic of the Kollsman Direction Indicator which makes it so well liked by many pilots. All of the points in azimuth are visible at all times, reading clockwise as on the compass rose of a navigation chart. A distinctive memo pointer may be set to the desired course so that any deviation is immediately apparent. The pilot merely keeps the pointers matched. These features make the instrument easy to read, easy to follow. Excellent performance characteristics also aid the flyer. The Direction Indicator is self-contained and fits the standard compass mounting, requiring only a light connection.

KOLLSMAN AIRCRAFT INSTRUMENTS

PRODUCT OF

SQUARE D COMPANY

ELMHURST, NEW YORK • GLENDALE, CALIFORNIA

APPROVED by C.A.A."

Your assurance of the Safety and Durability of . . .

Scott

3-24B

TAIL WHEEL ASSEMBLY

• The new Scott Model 3-24B has now been granted CAA approval—official recognition of the safety and soundness of the product. Incorporating all the advanced features of the original Model 3-24 which has won such wide acceptance and approval, the new Model 3-24B brings many added advantages!

Needle swivel bearings. These provide greatly increased bearing life—reduce wear—handle high impact loads more effectively.

A new bracket, even stronger than the original with newly arranged arm stops—preventing unintentional full-swivel action. The only automatic assembly safe for the novice pilot.

A re-designed arm assembly increases available locking force, yet reduces force required to place assembly in full-swivel. This means easy, positive control under all crosswind and field conditions.

In addition, the Model 3-24B offers these proven features:

- Patented Automatic Mechanism—dependable, long-wearing, simple.
- Single Arm Fork of drop forged chrome alloy gives maximum freedom from mud and ice accumulation.
- Wheel: High strength aluminum alloy castings rigidly locked with three AN bolts. Large Timken Roller Bearings, grease packed for long life. Felt grease seals and tight dust caps.
- Tire: 6x2 solid cushion with steel wire bead. Can't come off.

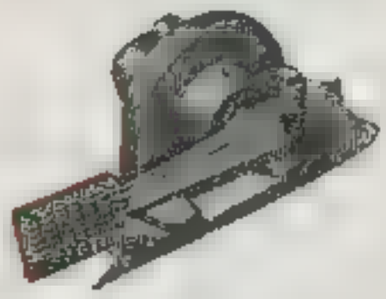
Scott

AVIATION CORPORATION

214 Erie St., Lancaster, N. Y., U. S. A.

Scott

BRAKE PRESSURE UNIT



Model B-711

The Model B-711 Scott Brake Pressure Unit was developed to meet the need on light aircraft for a complete reliable hydraulic brake actuating unit, eliminating the common difficulty of brake fluid leakage. The Model B-711 is of the diaphragm (piston) type which eliminates all leakage. Thousands of pairs furnished as original equipment with no reported failures. Available as a replacement for all Piper airplanes

List Price $24.75 per pair

the Joliet operation. Officials at the executive office include: George F. Getz, Jr., president; Russell E. Gage, vice-president and general manager; Bruce C. Hightower, vice-president and treasurer, and R. N. Little, secretary.

Improved Engine Rod In Production

An improved aircraft engine connecting rod is now in volume production by Studebaker, whose chairman, H. S. Vance, reported that although the rod was developed for Wright engines powering the B-17, the principles are applicable to all powered aircraft.

Vance, with authorization of the Air Technical Service Command, disclosed major features of the rod as:

- Longer life due to higher fatigue-resisting surfaces.
- Greater resistance to corrosion.
- Better surface protection during assembly and at parts repair depots.
- Less polishing in production.

Vance explained that there has been no change in connecting rod design and that what Studebaker production men have done is to adapt progressive, straight-flow techniques to already known methods of treating metal surfaces under the repeated impact of fine pellets. The process, he said, is made possible by precise, automatic control.

Republic Revamps

Production at the Evansville, Ind., plant of Republic Aviation is being switched from the P-47D *Thunderbolt* to the longer range P-47N and a new B-29 *Superfortress* cowling program.

The War Department notified Republic that the P-47D contract would be terminated in July. Due largely to the fact that working schedules have been cut from 55 to 45 hours per week in anticipation of cutbacks, no major reduction in personnel from the present force of 5,200 employees is expected.

- **Program Progress** — Re-tooling for B-29 cowling production is 80 percent completed and should be ready in time to absorb personnel. In addition, workers will be needed for output of the amphibious rescue plane, the *Seabee*, which is to be built at the Evansville plant.

New contracts for the long range P-47N will begin in July and

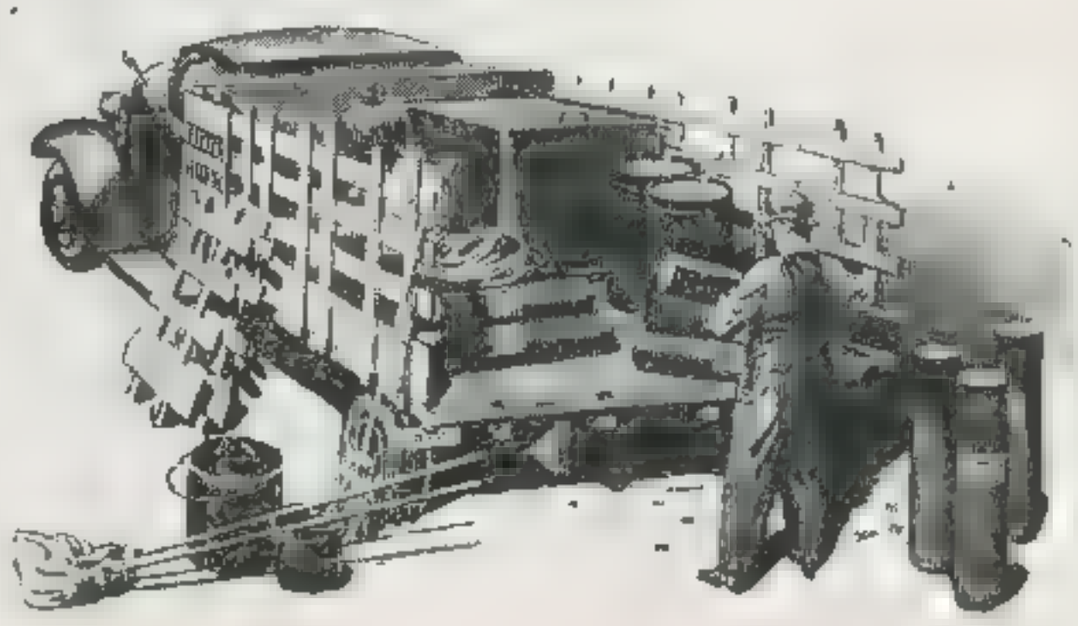
KOPPERS AND AVIATION

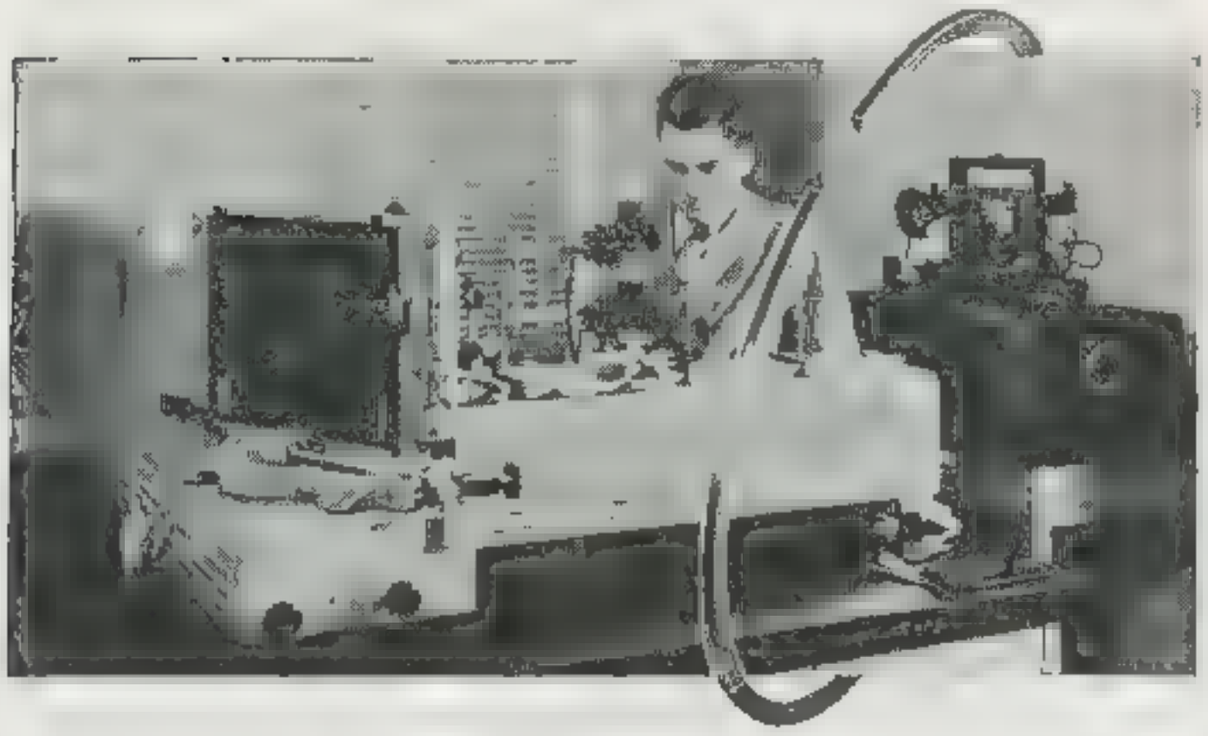
MORE AVIATION GASOLINE FROM COKE OVEN HM DERIVATIVES

Chemical compounds of high octane rating are used as additives to lower-grade gasoline to produce aviation-grade fuel. These compounds are cumene, made by combining benzene (which is recovered from Koppers-built coke ovens and refined in light-oil plants like this) with propylene (an oil refinery product), and ethylbenzene, (made by combining benzene with ethylene obtained from alcohol).

THE ROOF OF THE AIRPLANE AGE WAS HERE IN THE HORSE AND BUGGY DAYS

Many airport structures, and vast airplane factories covering acres have been roofed with Koppers Coal Tar Pitch Roofing . . . the kind of roofing which was setting up records for long life and freedom from maintenance back before airplanes were in common use. No one has ever been able to find any other type of roofing more durable than coal tar pitch.





THE MOST HARD-BOILED PISTON RING INSPECTOR IS A MACHINE

This is a spectrograph, used at the American Hammered Piston Ring Division of Koppers. It is the most eagle-eyed hard-boiled inspector of metal quality. It spots the tiniest trace of impurities, and checks the proportion of alloys down to quantities so minute that they can be detected in no other way. The spectrograph helps insure the quality of American Hammered Piston Rings, and, through its use in research, will continue to make rings give maximum performance.

KOPPERS

THE INDUSTRY THAT SERVES ALL INDUSTRY

KOPPERS COMPANY, INC., Koppers Building, Pittsburgh 19, Pa. . . . . . *Buy Victory Bonds . . . and keep them*

of course we'll

"KEEP 'EM FLYING"

Air Power has clearly demonstrated its vital role in helping to terminate the greatest struggle that man has waged against man. » »

So, too, Air Power is Peace Power, for by the lessons learned through war's testing needs, there have accrued such accelerated developments of safety, comfort, and efficiency, that this mighty power is further strengthened to guard the rights of all. » »

Years of experience in creating the famous P 47 Thunderbolt to exacting specifications of the Army Air Forces, and engineering and development work in the constantly broadening channels of aircraft construction, have developed a highly skilled group of scientifically trained workers here at Republic. We will continue to build planes needed to police and maintain world peace, and in addition, shall apply the energies of our seasoned personnel to the building of a line of aircraft for the peace time markets. Republic Aviation Corporation, Farmingdale, L. I.

REPUBLIC AVIATION
CORPORATION

Makers of the Mighty Thunderbolt

This is no Alchemist's dream

Alchemists of old, in long, labored attempts, tried vainly to change common ores to precious metals.

While Duramold hasn't changed lead to gold, in essence, Duramold's engineers have achieved the alchemists' goal. They impart new character to common materials.

In light, pliant materials—cloth, paper, glass fiber, wood veneers, cellular rubber and many others—the Duramold process *creates* a backbone of strength. Laminations of these materials are bonded with thermo-setting resins under heat and pressure, frequently using synthetic, lightweight core materials between laminations.

Duramolding gives them new qualities. Their pliancy is gone. They assume rigid strength, molded to precise specifications in intricate and complexly curved patterns.

Here, then, in an industry now devoted entirely to production for the Air Forces, lies the promise—and the reality—of new materials for builders of peacetime products. Here, as in all Fairchild research and engineering, lies "the touch of tomorrow."

YOUR PRODUCT—AND DURAMOLD. Your need for strong, lightweight materials—for parts impervious to extremes of weather, fungi or corrosives—may well find its answer at Duramold. Fairchild engineers are specialists in exploring the possibilities for new applications of Duramolded materials. For further detailed information about Duramold, send a letter on your business stationery. Write Department 10.

FAIRCHILD ENGINE AND AIRPLANE CORPORATION

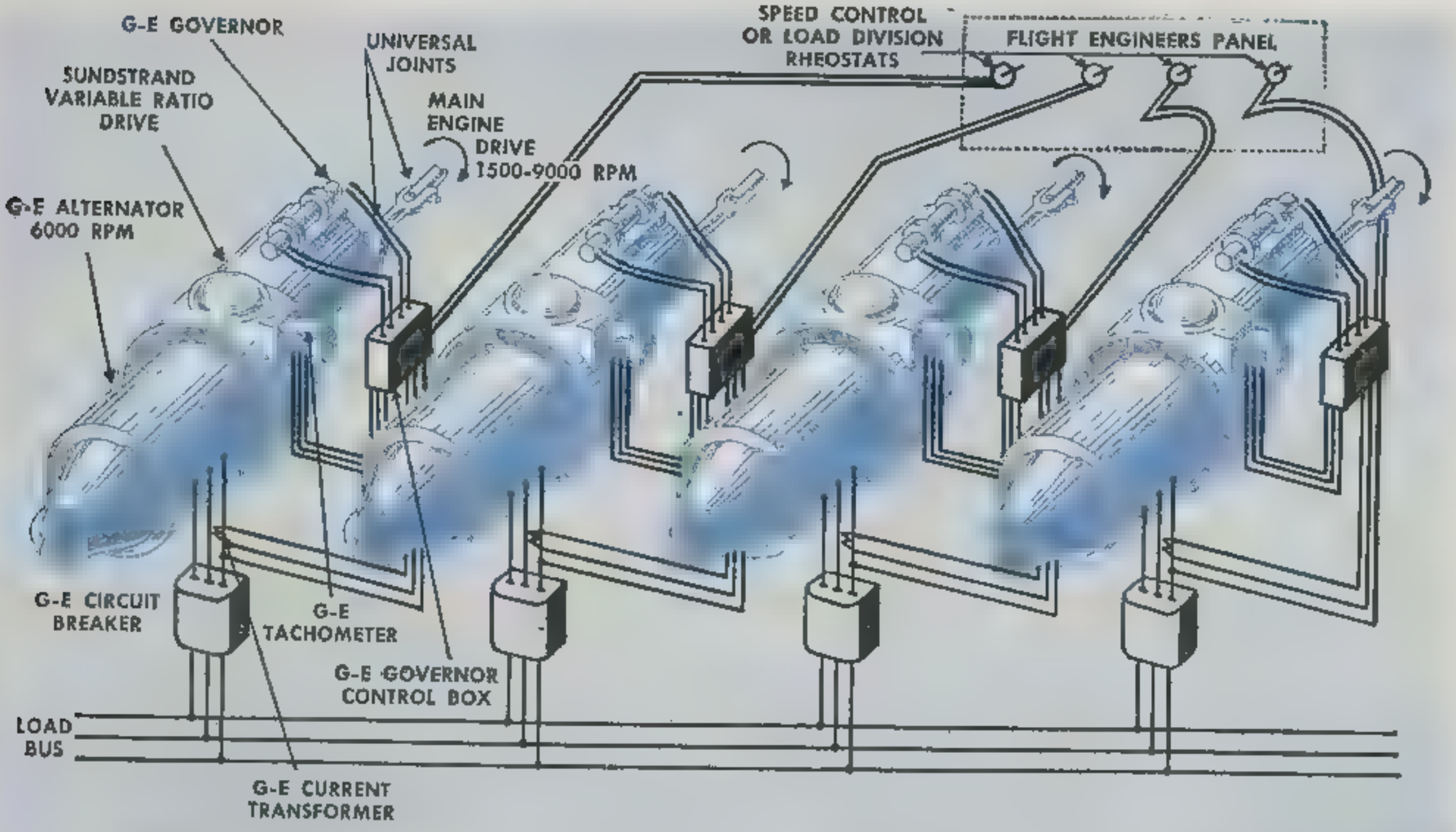
30 ROCKEFELLER PLAZA, NEW YORK 20, N. Y.

Ranger Aircraft Engines Division, Farmingdale, L. I. • Fairchild Aircraft Division, Hagerstown, Md. • Duramold Division, Jamestown, N. Y.

Subsidiary: A-Fin Corporation, Jamaica, L. I., N. Y. • Affiliate, Stratos Corporation, Babylon, L. I., N. Y.

400 CYCLE A-C MAIN POWER

FROM THE MAIN ENGINES DIRECT



INTERPOSED between each engine and alternator is a hydraulic, variable-ratio drive developed by Sundstrand with G.E.'s co-operation. A G-E governor on each drive acts as a "master-mind," adjusting the drive to maintain constant alternator speed and to divide the load equally among the alternators. Circuit breakers (which will be remotely controlled from the flight engineer's panel) connect each alternator to the power line at the engineer's discretion. No special synchronizing controls or indicators are needed.

Accessories, such as voltage regulators, differential current relay, exciter ceiling relay, and reactive load-division transformers, are provided, although not shown on this sketch.

PRECISION PRODUCTS & ENGINEERED SYSTEMS FOR AIRCRAFT

GENERAL ELECTRIC

For Utmost Dependability..

WITTEK *Aviation* HOSE CLAMPS

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Lear, Incorporated is one of the leading manufacturers of electro-mechanical control mechanisms. Its actuation and control systems have thus far served in over 750 applications on warplanes.

Lear produces parts and components which do the complete job—from converting electricity taken from the airplane's circuits to actual movement of controls, wing surfaces, landing gears and doors. Listed here are some of the applications served by Lear equipment.

Among the planes using Lear designed and produced electro-mechanical actuating mechanisms are:

BELL: B-29 (Superfortress), P-63 (Kingcobra), XP-77 • **BOEING:** AT-15 (Crewmaker), B-29 (Superfortress), XB-39, C-97 (Stratocruiser), XPBB-1 (Sea Ranger) • **BUDD:** RB-1 (Conestoga) • **CONSOLIDATED:** B-24 (Liberator), B-32 (Dominator), C-87 (Liberator Express), L8-30, PB2Y-3 (Coronado), PB4Y-2 (Privateer), RY-3, TBY (Seawolf), Model 39 • **CURTISS-WRIGHT:** C-46 (Commando), XP-55 (Ascender) • **DOUGLAS:** XB-19A • **EASTERN:** TBM (Avenger) • **FAIRCHILD:** AT-21 (Gunner), C-82 (Packet) • **FORD:** B-24 (Liberator) • **GENERAL MOTORS:** P-75 (Eagle) • **GOODYEAR:** F2G • **GRUMMAN:** F6F (Hellcat), F7F (Tiger Cat), F8F (Bearcat), TBF (Avenger) • **LOCKHEED:** P2V (Ventura), P-80 (Shooting Star) • **MARTIN:** BTM, B-29 (Superfortress), JRM-2 (Mars), PBM-5 (Mariner) • **NORTH AMERICAN:** B-24 (Liberator), C-82 (Packet) • **NORTHROP:** P-61 (Black Widow) • **REPUBLIC:** P-47 (Thunderbolt).

LEAR, Incorporated

Address all inquiries to: Home Office, Piqua, Ohio. Plants at Piqua, Ohio and Grand Rapids, Mich. West Coast Subsidiary, Lear, Inc. of Calif., Los Angeles, Calif. Research and Development: New York, N. Y.

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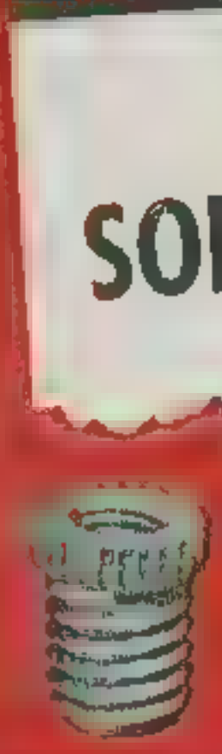
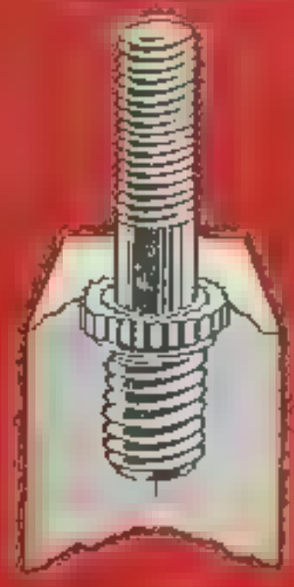
revolutionize fastening in

SOFT METALS • PLASTICS • WOOD





1. Drill, counter
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Permanent because locked in the material.

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THE NEW KOLLSMAN FOUR-ENGINE SYNCHROSCOPE enables the pilot or flight engineer to bring all engines quickly to the same r.p.m. for the uniform power output required by economy and correct operating procedures. Designed at the request of AAF to cover military needs, these synchroscopes also have their application to transport aircraft, where they contribute to passenger comfort as well as to proper operation of the plane. The accuracy and dependability of these synchroscopes, together with their simplicity of operation, are characteristic of all Kollsman Aircraft Instruments.

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Wherever Allied fighting planes are flying you'll find electrical equipment precision-built by Auto-Lite. Its quality proved in the tough test of combat — equipment resulting from long years of careful development and research. Pictured here are a few examples of such equipment.

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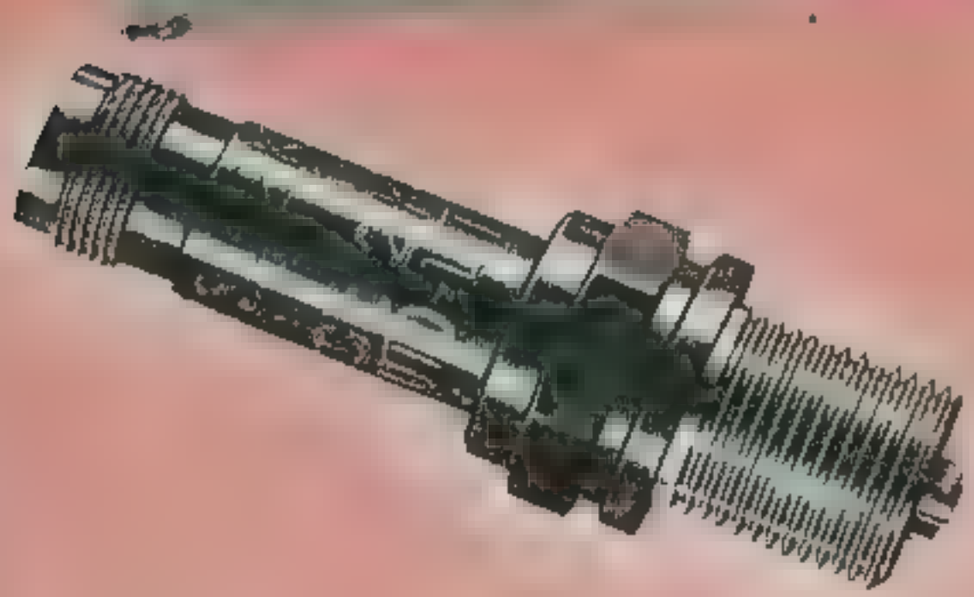
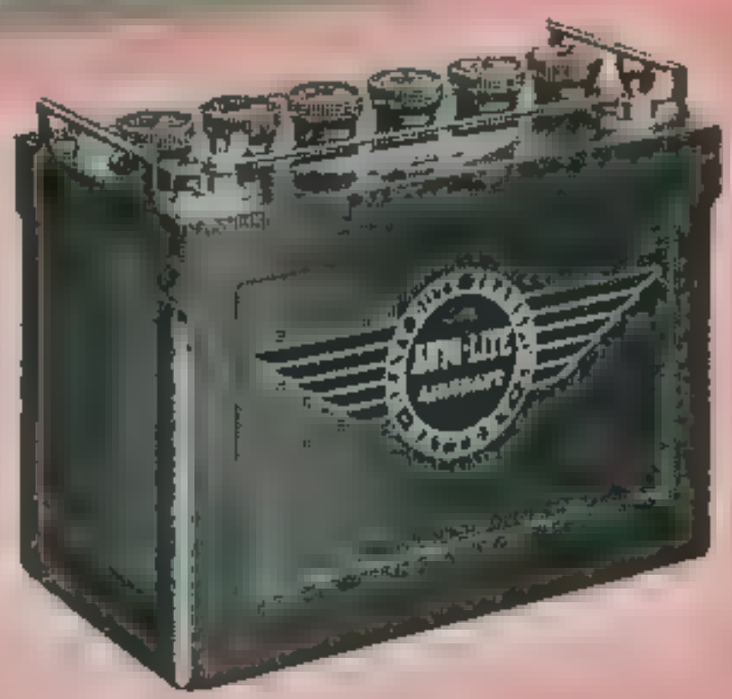
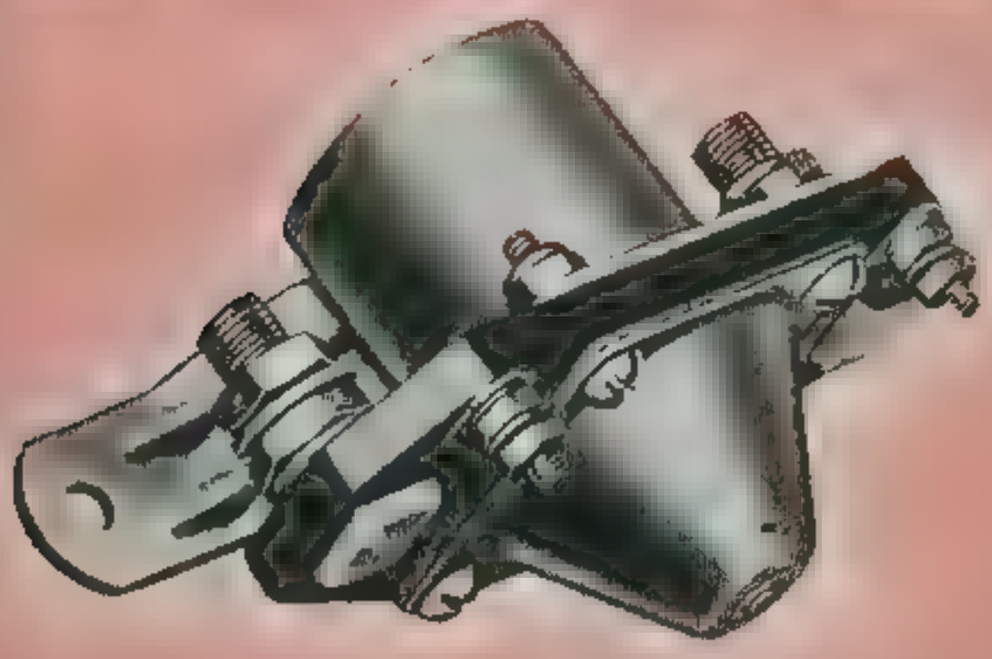


These great spark plugs feature (1) Direct contact non-inductive resistor located in coolest position in plug; (2) Deep drawn nickel alloy center electrode tip: (3) Improved copper cooled center electrode; (4) High Dielectric strength and superior mechanical properties of "Corundum," Auto-Lite's insulator material.



Auto-Lite batteries are available in both 12 volt and 24 volt types. All are equipped with special non-spill vent plugs and assembled in either hard rubber or radio-shielded aluminum containers. The heavy duty battery has a capacity of 105 A.H. at 5 hr. rate; others have capacity of 34 A.H. at the 5 hr. rate.



Auto-Lite relays are available for both continuous and intermittent duty. They more than meet the most exacting Government requirements, giving dependable operation under extreme conditions of vibration, acceleration and altitude. Both types available are operative from minus 60 degrees F. to 160 degrees F.

The 5 mm. high tension ignition cable (left) has stainless steel conductor, rubber insulation, glass braid, neoprene sheath. Vega Chromoxide magnet wire (center) has heat resistant, space-saving qualities. Formvar magnet wire (right) has a special enamel with abrasive resistance 3 times that of conventional enamel wire.

AUTO-LITE

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Continental-Diamond

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for a Better

TOMORROW ★

Illustrated is a DILECTO fabric base laminated phenolic part used in airborne electrical equipment. Since this part is subject to severe mechanical stresses and is also an insulator it must be strong and remain stable under vibration, high humidity and temperature extremes. DILECTO meets all these requirements, with a wide margin of safety.

C-D Dielectric materials are engineered to meet specific electrical and mechanical problems. There are standard grades developed as a result of experience gained during 50 years of serving manufacturers in every industry. These standard grades can, however, be modified to meet particular problems. Combinations of the different C-D NON-metallic materials can also be made to provide required combinations of properties. C-D technicians will be glad to study your "What Material" problems and suggest solutions.

K-45

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General Electric builds a new flight-test headquarters at Schenectady

Very soon now this combination hangar, laboratory, and workshop will be humming with electric power being utilized in equipment specially developed for aircraft an inspiration for G.E.'s air-minded research workers. Here, new systems and equipment designed to make flying faster, safer, and more comfortable will be tested on planes of all types. For the first time, General Electric flight-test facilities will be concentrated under one roof, and near the parent plant where design engineers can rapidly check test results. Scheduled for test soon are many G-E products and systems that were designed during the war and are now being adapted for civilian use. They include the autopilot, d-c and a-c power systems, instruments, electronic and communication equipment, power apparatus, and, of course, aircraft gas turbines.

Although we will continue to develop equipment for the Army and Navy, a large part of our efforts will be devoted to civilian planes. G-E engineers, with their invaluable wartime experience, will be available to work with you on new developments and to show you what we have that may solve your design problems. *Apparatus Dept., General Electric Co., Schenectady 5, N. Y.*

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ENGINEERED SYSTEMS
FOR AIRCRAFT

GENERAL ELECTRIC

Problem of Pilot Fatigue Stressed

NYU professor tells ASME scientists must cooperate in redesigning to "adapt machine to man."

The physiological effects on humans of flight, studied intensely during the war by flying forces of all nations, is a problem calling for the "adapting of the machine to the man," in the opinion of Frederick K. Teichmann, professor of aeronautical engineering at New York University.

Terming this the application of biomechanics to airplane design, he told the American Society of Mechanical Engineers that the whole problem is one that must be solved not only by engineers, but also by doctors, psychologists and physiologists.

▸ **Cockpits**—Teichmann was particularly critical of present cockpit design, declaring it has been built up as a result of a series of compromises.

Among reactions that should be considered are the sense of feel and touch; sight (type of illumination, and numerals on dials); smell (ventilation); and also the sense of hearing.

He recommended increased study of fatigue, and the effect of noise, vibration, heat and other factors on man's ability to resist fatigue.

▸ **Nazi Discoveries** — Fatigue and vibration have long been under intensive study, especially by the flying forces. An interesting report of German discoveries of one effect of flight in jet-propelled aircraft has been released by the Combined Intelligence Objective Subcommittee. Many of the pilots that flew jet aircraft for as little as ten minutes appeared unduly fatigued upon landing and some even had no recollection of landing

The presumed cause was that the high frequency vibrations generated by the jet unit produced a noxious effect on the pilot. This belief was lent some support by observation of workers testing the jet engines of V-1's before assembly.

Some individuals experienced headaches, nausea and erratic gait after very brief exposure to the noise and vibrations of the engines.

German scientists were working on counter-measures at the end of the war

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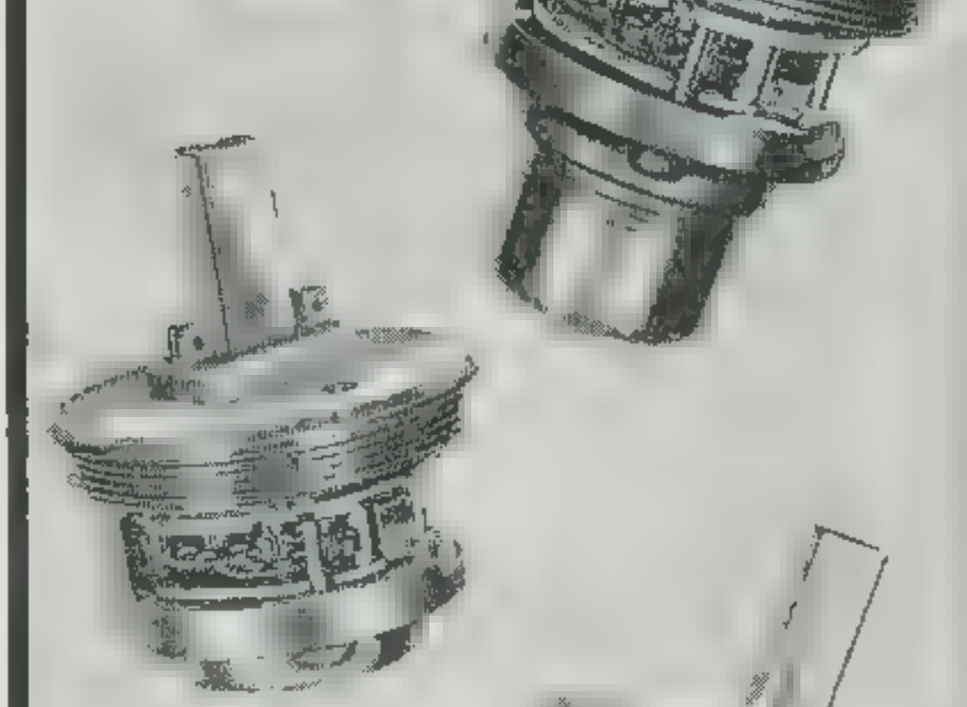

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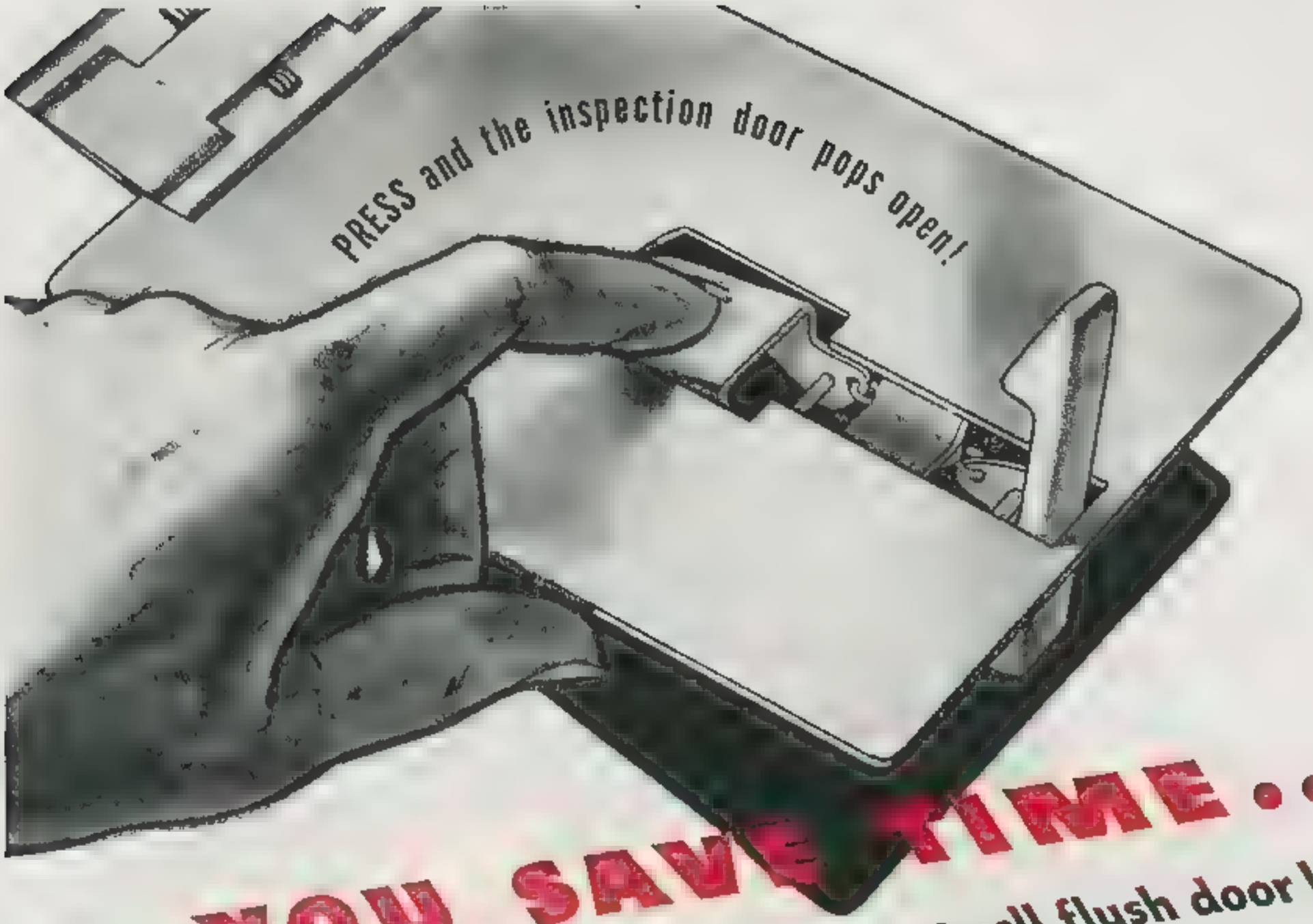


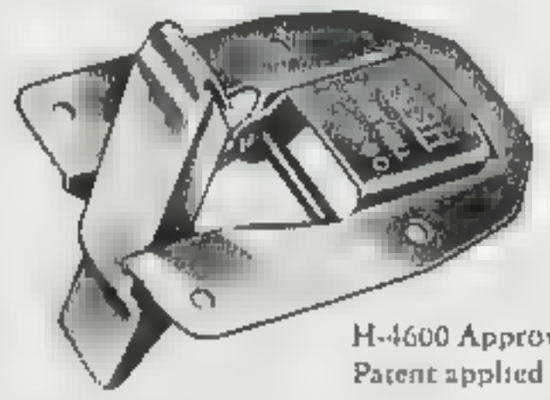
YOU SAVE TIME . . .

when you install the new Hartwell flush door latch

Hartwell's new, stainless steel, flush door latch eliminates the slow, tedious removal and replacement of inspection and access doors. Because of its fast action, it can save as much as 30 minutes in the inspection of a single plane. Its flush installation and positive lock give it a multiplicity of uses.

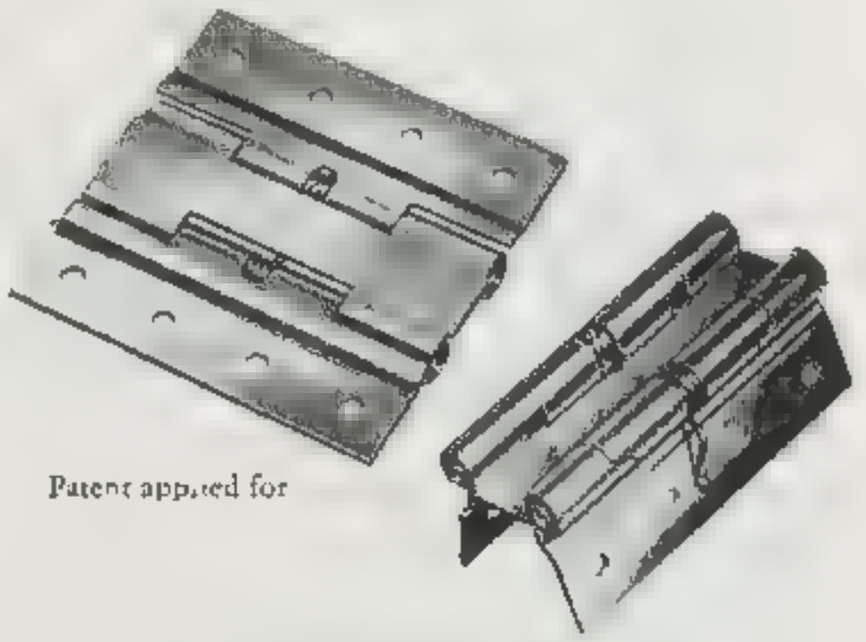
In addition to inspection and access doors, aircraft manufacturers are specifying the Hartwell flush latch on radio panels, baggage compartment doors, emergency exit door plates, galley cabinet doors, magazine racks, upper berths.

The Hartwell latch presents a smooth, flush surface; eliminates projecting knobs; lets you get into narrower spaces. It can be used on doors of varying sizes, shapes and material, and with or without a flush hinge. Simple in design, it is inexpensive to produce, and can be supplied unmounted or spotwelded to an installation plate.



H-4600 Approved by A A F
Patent applied for

Made of Stainless Steel. Redesigned for greater strength, the new Hartwell flush door latch, H-4600, is now being made of stainless steel. It is interchangeable with the initial Hartwell latch, H-4525. Weighs ⅔ oz.



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Double-Action, Flush Hinge. Hartwell's new flush door hinge, made of stainless steel or Dural, is a companion piece to the flush latch. A center leaf, operating on twin hinge pins, provides a flush, splash-proof fit. Spring-loading controls the degree of travel. Standard sizes: 1⅞ and 3½ in. Other sizes made to order.

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★ *Specifications and engineering data on many Parker products available for transport designers and engineers in Bulletin No. 508 Write Sales Department, The Parker Appliance Company, 17325 Euclid Ave., Cleveland 12, Ohio. Please refer to this advertisement.*

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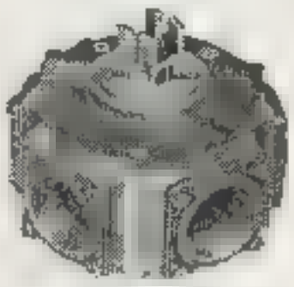

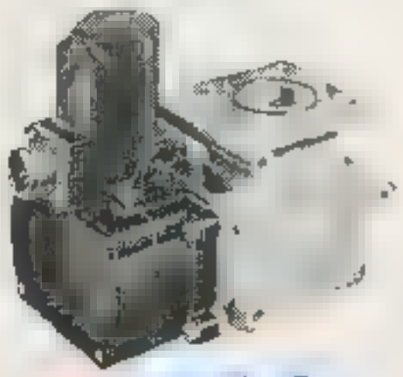

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The DILECTO punched part illustrated is a stator for an aircraft booster switch. It must of course have high dielectric properties. It must also be strong enough to support current carrying parts, and not deteriorate from vibration and impact shock. Its dielectric properties must be stable regardless of temperature, humidity or dryness. Finally it had to be made from a material that could be accurately punched. DILECTO met all these requirements with a wide margin of safety.

There are many grades of DILECTO. Each developed to meet specific electrical, mechanical, chemical or thermal problems. Special grades can be developed to meet unusual problems. DILECTO is also available in combination with Diamond Fibre to still further enlarge its sphere of usefulness. This C-D NON-metallic may be the answer to your "What Material?" problem, in your present and future products, whether used in the air, on land or sea.

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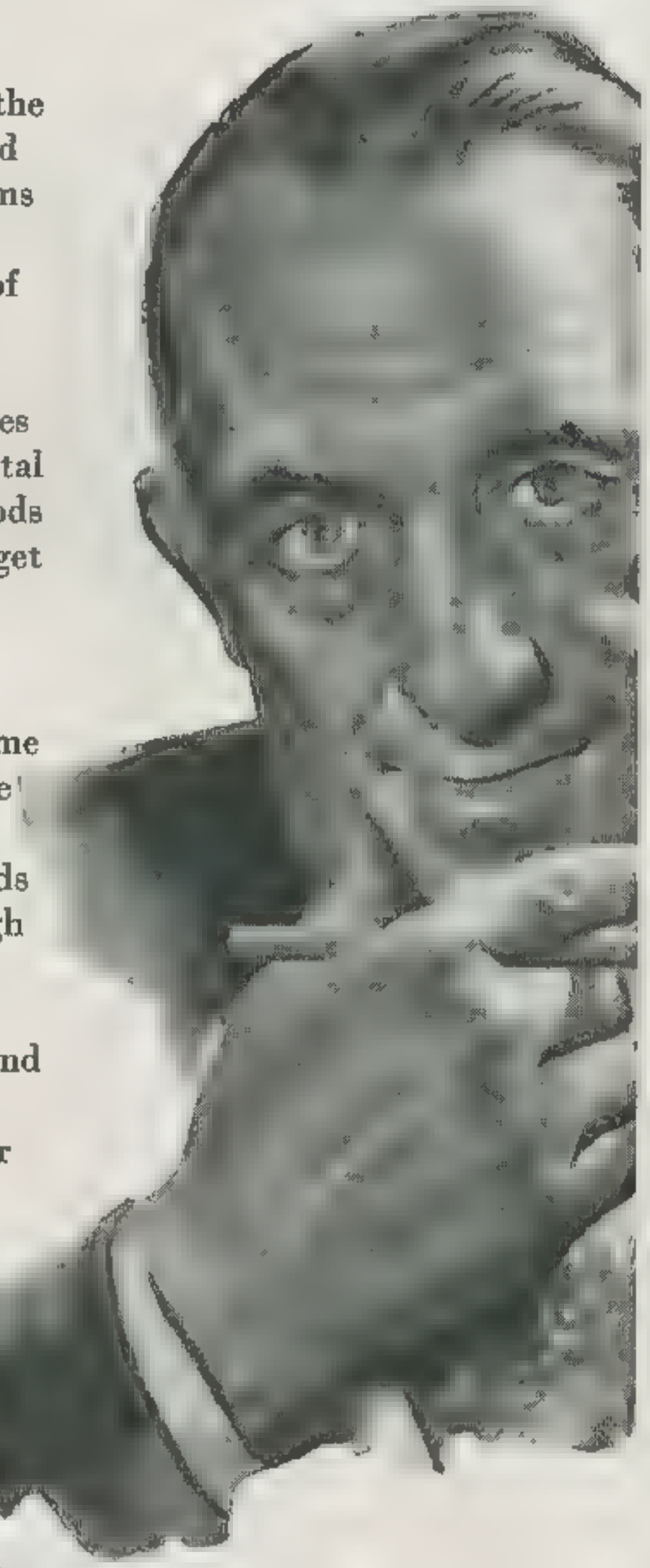

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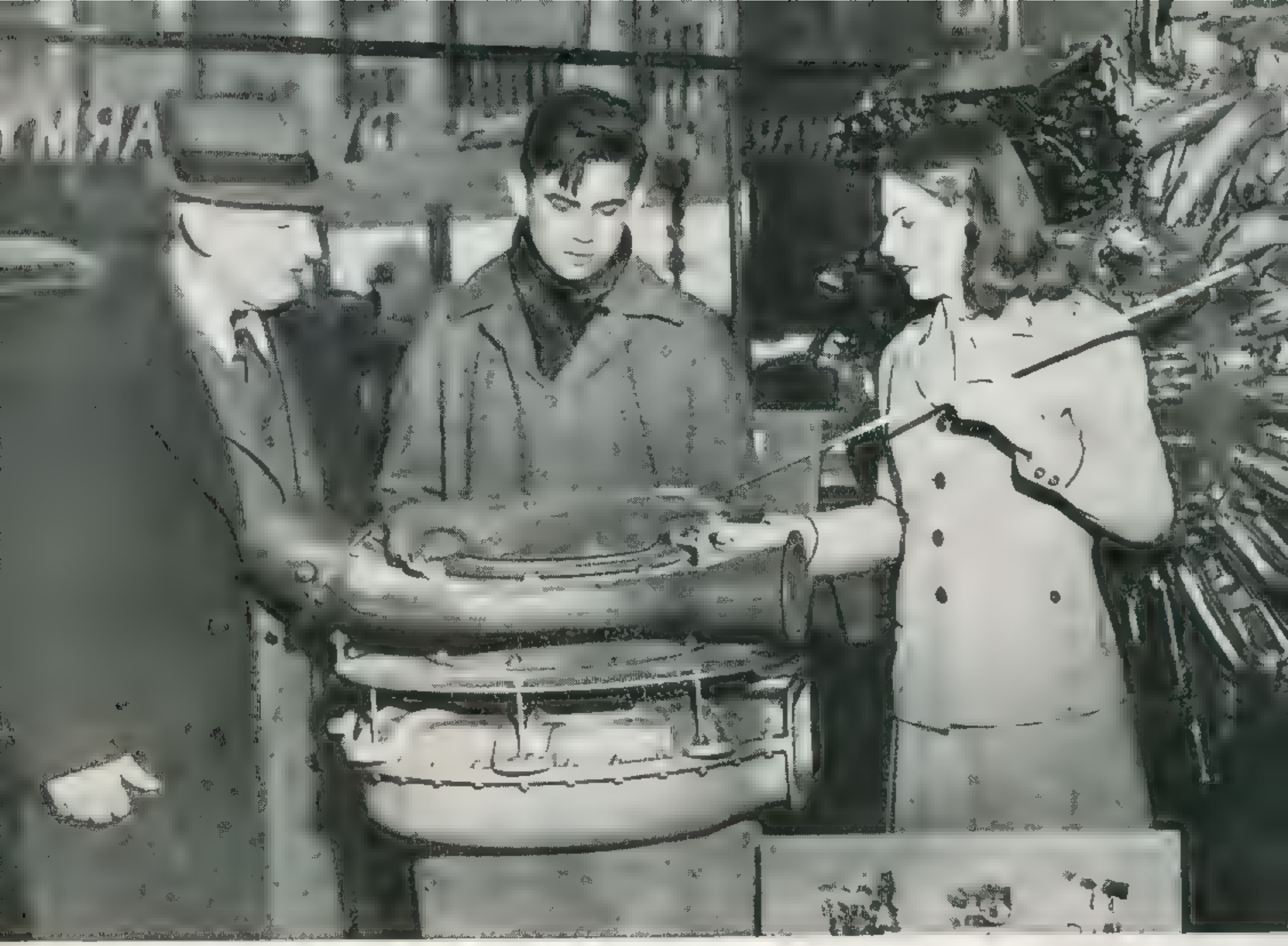


Veteran Comes Home

VETERAN of 102 combat missions against German targets, this turbosupercharger was the gift of the crew of the bomber, "Mizpah," to G.E.'s Dr. Moss, who was instrumental in the development of the turbosupercharger. Minute examination of this turbo showed that the turbine wheel, which had operated 1004 hours, revolving up to more than 24,000 times a minute, was still sound. In fact, all parts were in working order.

Paradoxically, the turbosupercharger runs both hot and cold. Eighteen inches away from the intake duct, where temperatures may be as low as −67 F, is a roaring inferno of blazing gases, at 1500 F. It is hard to believe that metals developed for these extreme temperatures can stand such long hours of combat service. That this turbosupercharger is still in running order is a tribute to all those who participated in its development and manufacture.

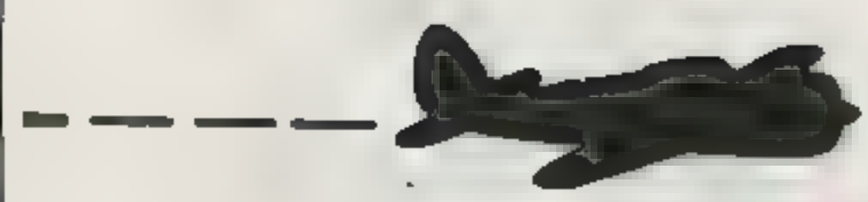
The G-E turbosupercharger, a precision product for war, will also further peacetime aviation. Today, General Electric is concentrating solely upon its war applications; also on aircraft gas turbines, special motors, and many kinds of engineered systems—all going to the Air Forces as fast as we can make them. G-E engineers are always interested in new projects, and will be glad to discuss yours with you at any time. *General Electric, Schenectady 5, N. Y.*

PRECISION PRODUCTS
AND
ENGINEERED SYSTEMS
FOR AIRCRAFT

BUY WAR BONDS as your stake in America's future

GENERAL ELECTRIC

674-38-8872



up to 40 mph regained

PILOTS FREE TO CONCENTRATE ON FLYING

COMBAT pilots shouldn't have to be continually adjusting the position of cooling flaps and exit shutters. Yet, in the past, that was the only way they could minimize drag consistent with engine cooling requirements. The tendency was to play it safe, leaving flaps and shutters open wider than necessary. The resulting drag caused as much as 10 per cent loss of speed on a 400-mph ship.

It's a different story now, because of G-E automatic temperature control!

Employing a remarkable new temperature-sensitive material, General Electric has developed a system that *automatically* positions flaps to maintain the most efficient temperature of engines, oil, carburetor air, and coolant. Excessive drag is avoided. So is the danger of overheating. The pilot can devote *all* his attention to other duties.

LIGHT WEIGHT

This new G-E system involves but a slight weight penalty: only 4.6 pounds in the case of engine-head temperature control. It holds temperature accurately, without hunting. It is flexible, being adaptable to almost any type of temperature control, and is easily applied because all components are interconnected electrically.

G-E automatic temperature control is used on important planes now in production, and will be installed on several other new fighter, bomber, and cargo ships. It should be a "natural" for postwar commercial planes from the standpoints of both fuel economy and freedom for pilots.

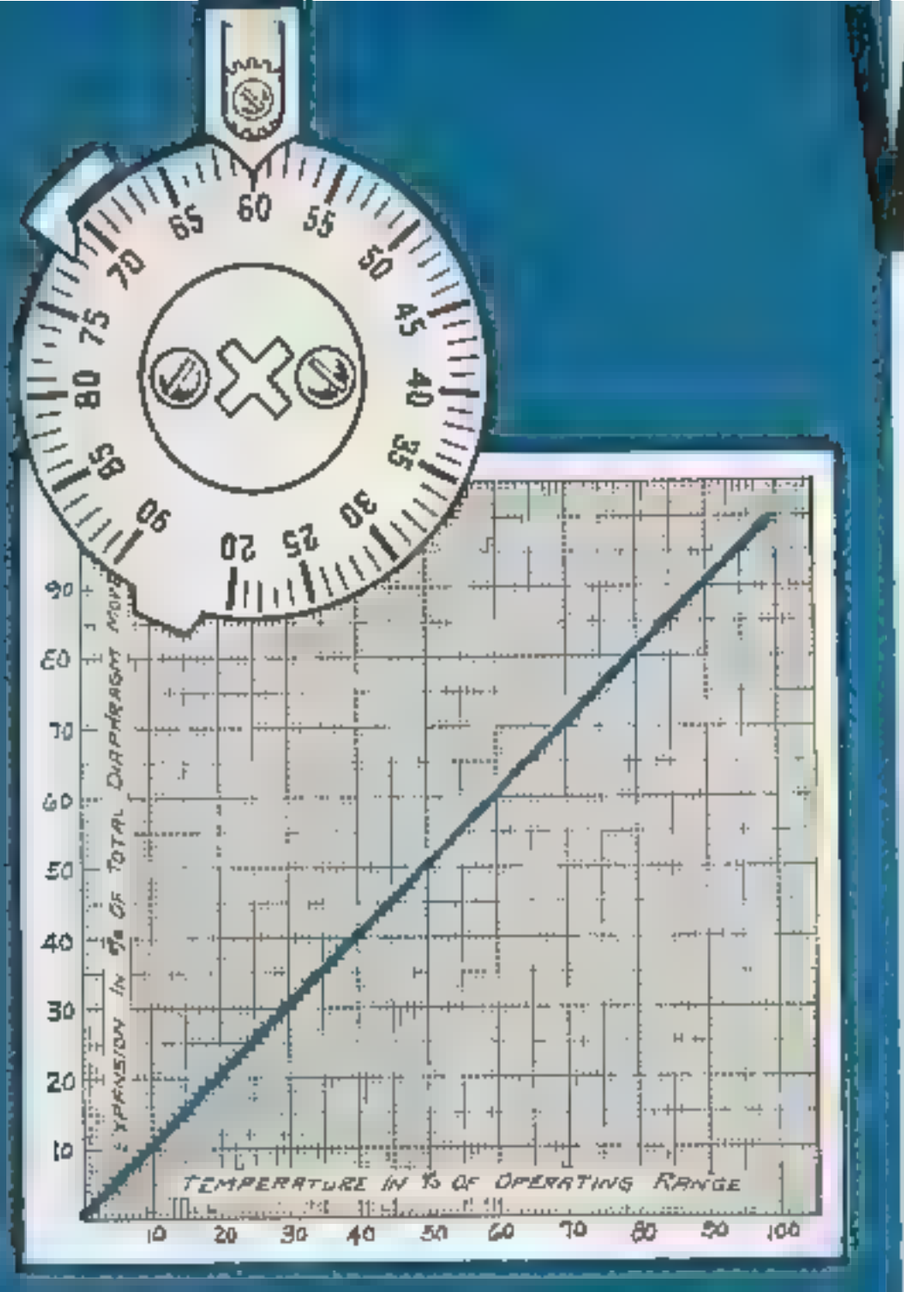
May we tell you why automatic temperature control and other G-E pre-engineered systems for aircraft can mean substantial savings in engineering man-hours and assembly time for you? *General Electric Company, Schenectady 5, N. Y.*

The heart of the new system is this G-E developed controller. A highly sensitive, polarized relay (in top of case) responds to the signals from the thermo-sensitive elements, energizing power relays (below). The power relays then actuate the flap motor to open or close the flaps. The rate of response is extremely rapid, and the follow-up principle employed insures positive operation without hunting.

Buy all the BONDS you can
—and keep all you buy

PRECISION PRODUCTS & ENGINEERED SYSTEMS FOR AIRCRAFT

GENERAL ELECTRIC



When you put your other than aircraft products on the market, post-war, make sure that their automatic features are as trouble-free as you can make them. If they depend on temperature or pressure for their operation, investigate White-Rodgers controls. Dependability, ruggedness and freedom from trouble will make them your first choice.

Dials are evenly and

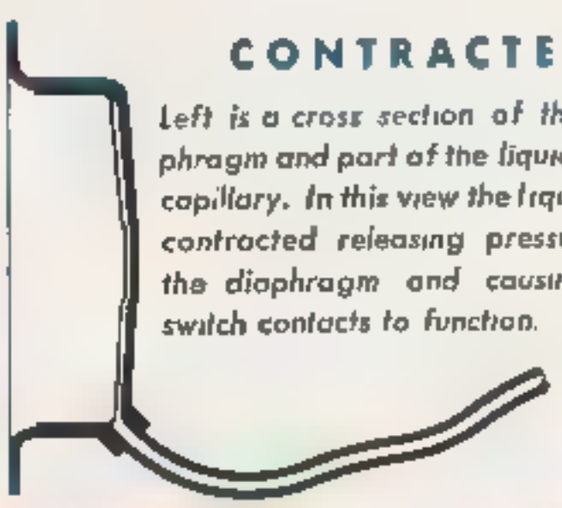
ACCURATELY CALIBRATED

because diaphragm motion is uniform over entire operating range

With each degree of temperature change, the expansion and contraction of the Hydraulic-Action solid-liquid charge is exactly the same. That is why the dials on all White-Rodgers Hydraulic-Action controls are *evenly* calibrated — and always are accurate over their *entire* range. That feature eliminates repeated service calls for adjustment or re-calibration when you equip with White-Rodgers Hydraulic-Action controls. Here's how it works:

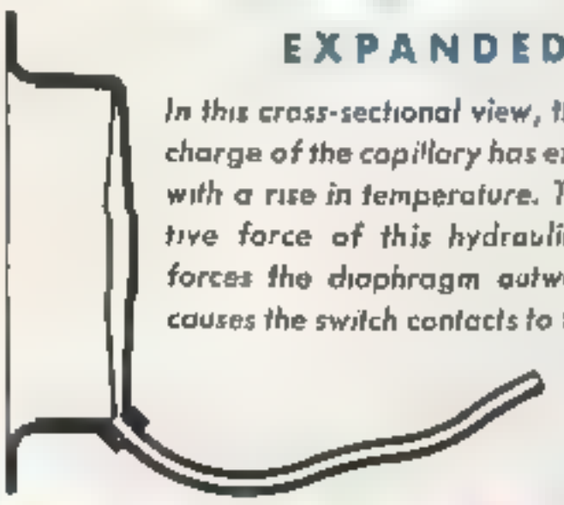
HYDRAULIC-ACTION...*how it works*

Actual size illustration of the White-Rodgers Hydraulic-Action diaphragm body, the actuating element of every White-Rodgers temperature control. It is so designed as to exert full pressure at the point of contact with the switch mechanism



CONTRACTED

Left is a cross section of the diaphragm and part of the liquid-filled capillary. In this view the liquid has contracted releasing pressure on the diaphragm and causing the switch contacts to function.



EXPANDED

In this cross-sectional view, the liquid charge of the capillary has expanded with a rise in temperature. The positive force of this hydraulic action forces the diaphragm outward and causes the switch contacts to function.

8 EXCLUSIVE FEATURES OF WHITE-RODGERS HYDRAULIC-ACTION TEMPERATURE CONTROLS

1. May be mounted at any angle or position, above, below or on level with control point.

2. Hydraulic-Action principle incorporating solid-liquid filled bulb and capillary provides expansion force comparable to that of a metal bar.

3. Diaphragm motion uniform per degree of temperature change.

4. Power of solid liquid charge permits unusually sturdy switch construction resulting in positive contact closure

5. Heavier, longer-wearing parts are possible because of unlimited power.

6. Dials are evenly and accurately calibrated over their entire range because of straight-line expansion.

7. Controls with remote bulb and capillary are not sensitive to change in room temperature Accuracy of control is not affected by temperature changes in surrounding area.

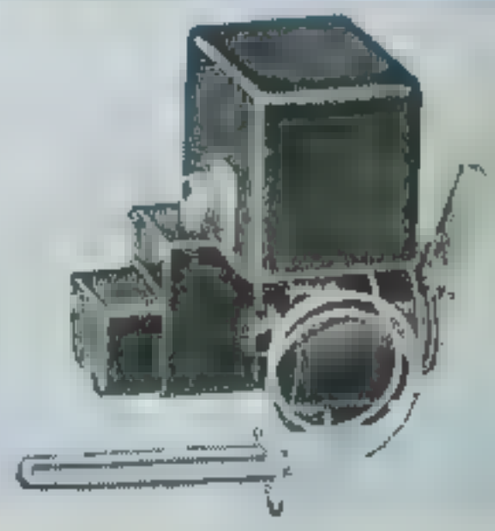
8. Not affected by atmospheric pressure. Works accurately at sea level or in the stratosphere without compensation or adjustment.

AIRCRAFT CONTROLS

White-Rodgers modulating temperature controls and Servo Actuators provide the safety of automatic local or remote control and assure greater freedom for the pilot in applications involving the control of:

Cabin Temperature
Anti-Ice Temperature
Carburetor Mixture
Carburetor Throttle
Carburetor Air Temperature

Authorized manufacturers concerned with the above or similar applications may secure engineering data upon request.



WHITE-RODGERS ELECTRIC COMPANY

1209 CASS AVENUE • ST. LOUIS 6, MO.

CONTROLS FOR REFRIGERATION • HEATING • AIR CONDITIONING

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Primary Trainers—Gliders—Sailplanes—Barrage Balloons

FOR SALE

Through Reconstruction
Finance Corporation

PRIMARY TRAINING PLANES*

Boeing PT-17; Fairchild PT-19 and PT-23. Single engine . . . 2-seated . . . Tandem . . . open cockpit. Cruise at over 90 m. p. h. CAA type-certificated. Prices are low—$875 to $2,400—to allow for repairs necessary to meet CAA requirements. For sale at all RFC Sales Centers. **$875 to $2,400**

GLIDERS AND SAILPLANES*

(CAA Type-Certificated)

Waco CG-3A, 9-place cargo and passenger gliders. New. *Only 22 of these left.* Price $875. For sale at RFC Sales Center, Americus, Ga.

Taylorcraft TG-6 2-place gliders. Price $350. Convertible to power. 65 h. p. engines for conversion available from RFC for $150 to $485. Gliders for sale at following RFC Sales Centers: Albuquerque, N. Mex.; Oklahoma City, Okla.; Ft. Worth, Texas; Phoenix, Ariz.; and Ontario, Calif.

Pratt-Read TG-32 sailplanes. Two-place side-by-side. New. Price $500. For sale at RFC Sales Center, Americus, Ga.

***These models are type certificated but individual planes must be repaired to meet Civil Aeronautics Administration airworthiness requirements for civilian flight.**

BARRAGE BALLOONS

Constructed of light weight 2-ply neoprene-coated fabric. Weighs 8.4 oz. per sq. yd. Suggested for use where light weight weather-proof material is required. Two sizes available; one contains 260 sq. yds. of fabric; the other contains 781 sq. yds. 250 for sale. For sale as units. Price $1.00 per sq. yd. Address inquiries to Aircraft Division, RFC, 1625 K Street, N. W. Washington, D. C.

SALES CENTERS

(Cities listed alphabetically by States)

LOCATION	AIRPORT
Birmingham, Alabama	Municipal
Decatur, Alabama	Municipal
Phoenix, Arizona	Thunderbird II
Tucson, Arizona	Ryan
Wickenburg, Arizona	Echeverria
Pine Bluff, Arkansas	Grider
West Helena, Arkansas	Thompson-Robbins
Blythe, California	Gary
Dos Palos, California	Eagle
Fresno, California	Chandler Field
Hemet, California	Ryan
Ontario, California	Cal Aero
San Jose, California	San Jose
Denver, Colorado	Hayden
Miami, Florida	Chapman
St. Petersburg, Florida	Ludwig-Sky Harbor
Americus, Georgia	Souther
Augusta, Georgia	Bush
Douglas, Georgia	Municipal
Lansing, Illinois	Ford Lansing
Indianapolis, Indiana	Sky Harbor
Davenport, Iowa	Cram
Wichita, Kansas	Municipal
Baton Rouge, Louisiana	E. Baton Rouge Parish
North Grafton, Massachusetts	North Grafton
Lansing, Michigan	Capitol City
Minneapolis, Minnesota	Victory
Clarksdale, Mississippi	Fletcher
Madison, Mississippi	Augustine
Cape Girardeau, Missouri	Harris
Kansas City, Missouri	Municipal
Robertson, Missouri	Municipal
Sikeston, Missouri	Harvey Park
Helena, Montana	Municipal
Omaha, Nebraska	Municipal
Reno, Nevada	Reno
Readington, New Jersey	Solberg-Hunterton
Albuquerque, New Mexico	Army Air Field
Albany, New York	Albany
Rochester, New York	Municipal
White Plains, New York	Westchester County
Charlotte, North Carolina	Cannon
Akron, Ohio	Municipal
Cincinnati, Ohio	Lunken
El Reno, Oklahoma	Mustang
Muskogee, Oklahoma	Hat Box
Oklahoma City, Oklahoma	Cimarron
Ponca City, Oklahoma	Municipal
Stillwater, Oklahoma	Municipal
Portland, Oregon	Portland-Troutdale
Pittsburgh, Pennsylvania	Betts
Bennettsville, South Carolina	Palmer
Camden, South Carolina	Woodward
Sioux Falls, South Dakota	Sioux
Jackson, Tennessee	McKellar
Union City, Tennessee	Lambry-Ridge
Badinger, Texas	Bruce
Corsicana, Texas	Corsicana
Cuero, Texas	Municipal
Fort Stockton, Texas	Gibbs
Fort Worth, Texas	Hicks
Houston, Texas	Municipal
Lamesa, Texas	Lamesa
San Antonio, Texas	Municipal
Stamford, Texas	Arledge
Vernon, Texas	Victory
Salt Lake City, Utah	Municipal No. 1
Alexandria, Virginia	Hybla Valley
Olympia, Washington	Army Air Field
Morgantown, West Virginia	Municipal

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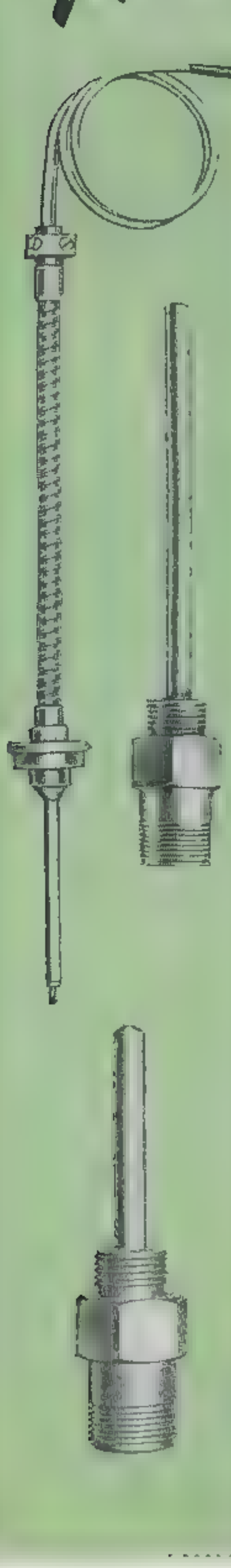
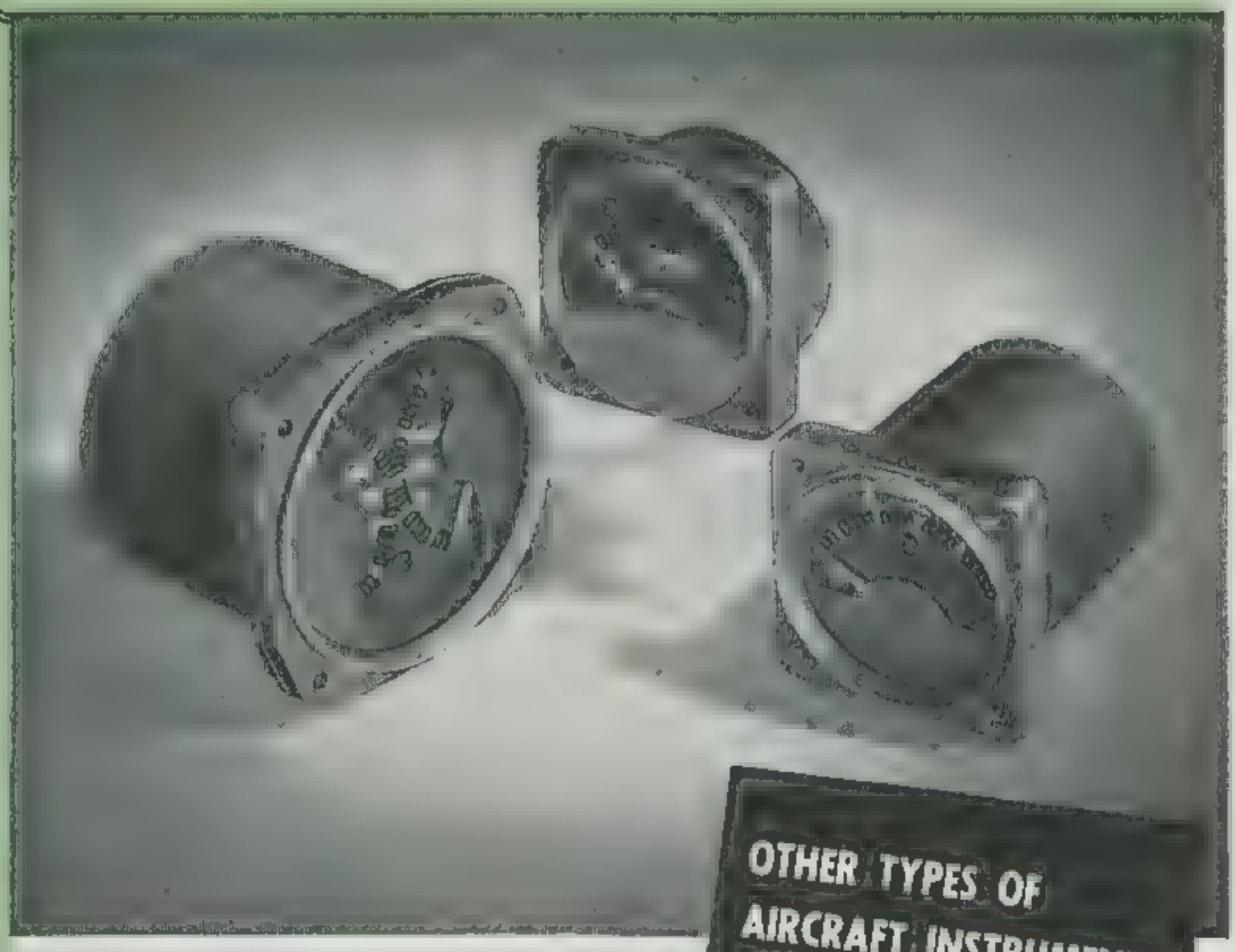
A DISPOSAL AGENCY DESIGNATED BY THE SURPLUS PROPERTY BOARD

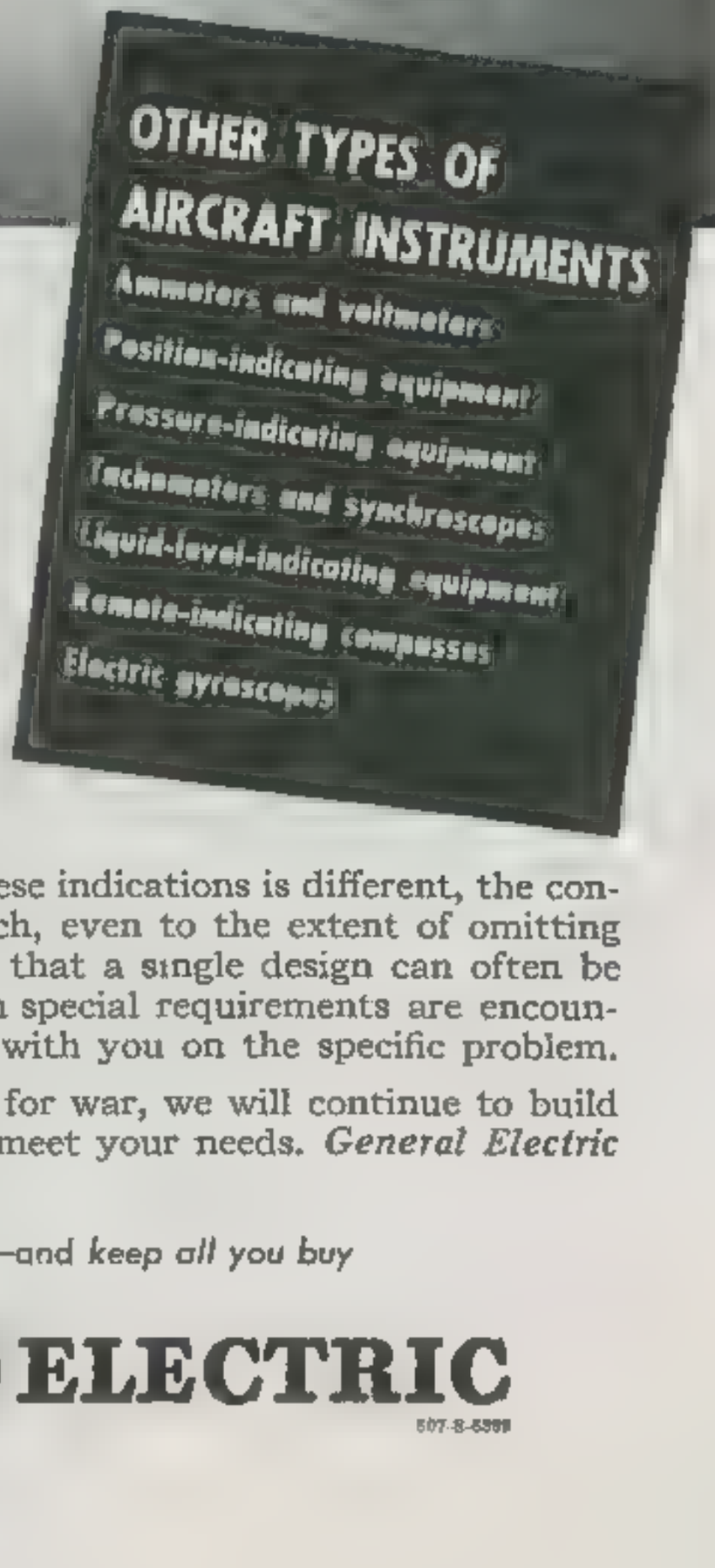
14-3T

AIRCRAFT INSTRUMENTS

by GENERAL ELECTRIC







Remote-indicating Temperature Equipment

● On present-day aircraft, two basic systems of temperature indication are widely used. They are the *ratio-type*, which is used for the indication of oil temperature, carburetor-air temperature, and outside-air temperature, and the *thermocouple-type*, which is used for the measurement of exhaust gas temperature and for other special applications.

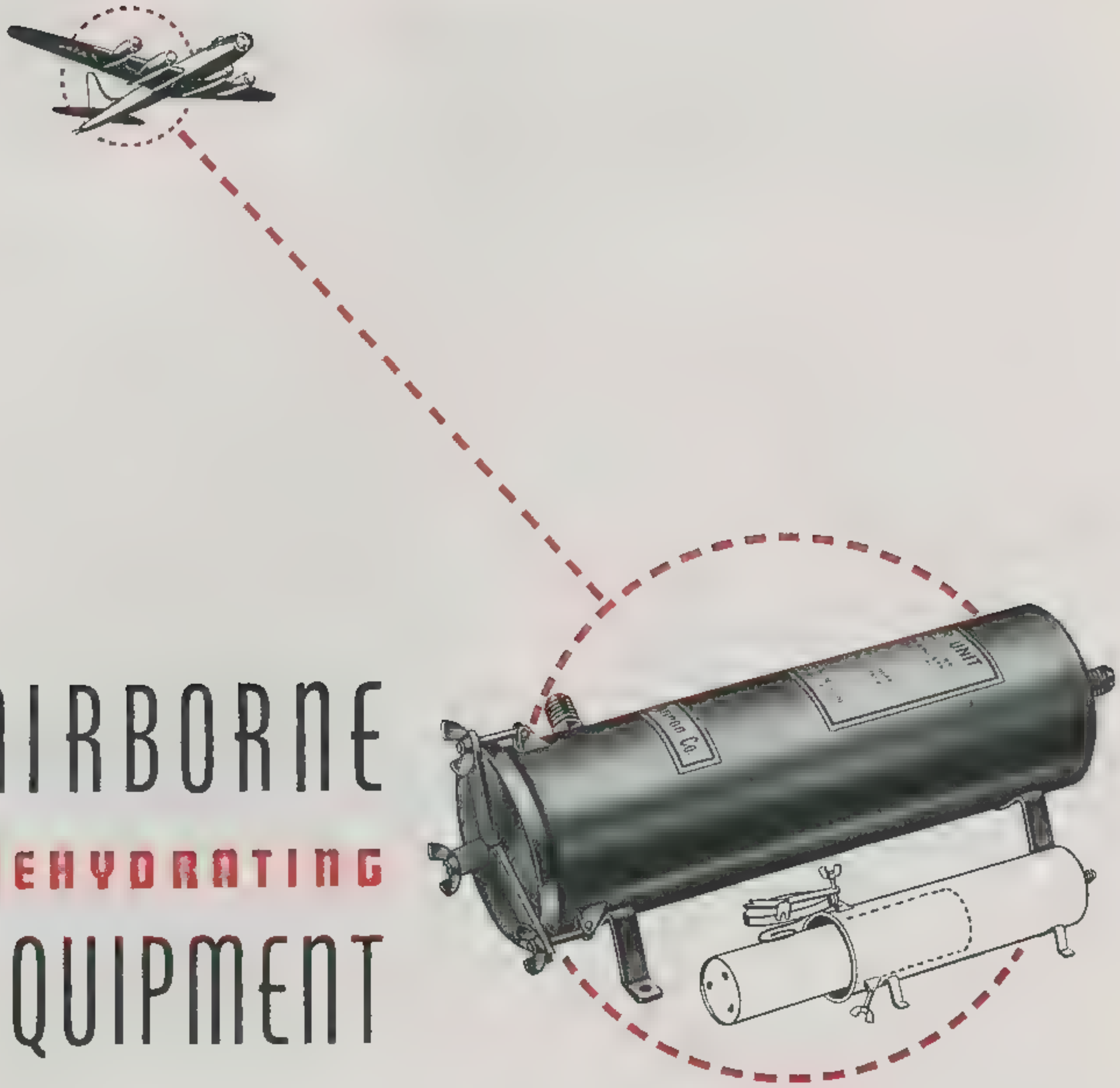
Although the required range of each of these indications is different, the construction of these G-E instruments is such, even to the extent of omitting names of functions from the scaleplates, that a single design can often be used for various purposes. However, when special requirements are encountered, G-E engineers will be glad to work with you on the specific problem.

When our facilities are no longer needed for war, we will continue to build many designs of aircraft instruments to meet your needs. *General Electric Company, Schenectady 5, N. Y.*

Buy all the BONDS you can—and *keep all you buy*

GENERAL ELECTRIC

507-8-5388



AIRBORNE DEHYDRATING EQUIPMENT

This D-10 Dehydrator Unit for the B-29 Bomber is just another practical application of the Russell R. Gannon System for the control of moisture content, relative humidity, and dew point of air and gases.

This unit including its dehydrating cartridge weighs but four pounds and has a moisture pick up capacity of 50 grams of water while maintaining a dew point of 90° F below zero.

The Gannon System is applicable to many other dehydrating problems, and usually eliminates expensive and cumbersome installations.

The dehydrating chemicals are so inexpensive to replace as to be expendable at a negligible cost.

Precision tested dew point color change indicators are available to insure accuracy of working conditions.

If you have a dehydrating problem, consult Gannon. Gannon's Engineers welcome your inquiry.

Russell R. GANNON Co.
CONDITIONING EQUIPMENT
Cincinnati 2 • Ohio

U. S. Air Forces Photo

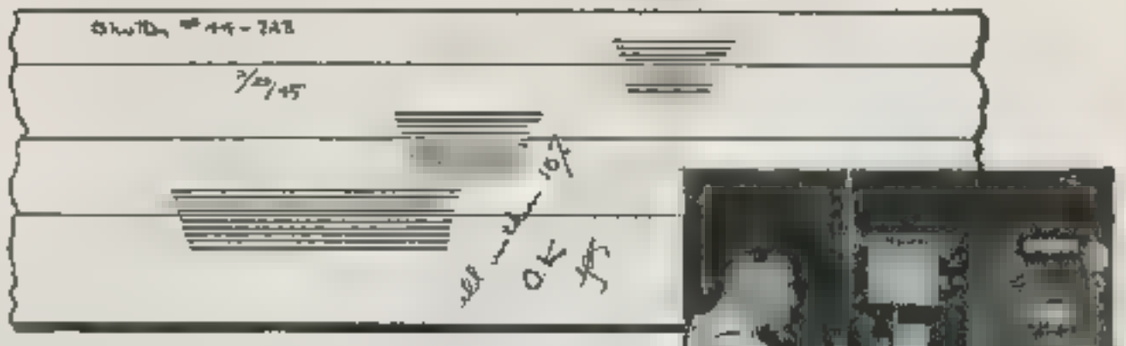
Triple-Eyed Sky Spies

...that photograph 20,000 square miles in 3 hours

Unmapped enemy territory lies 15,000 feet below. Three wide angle lens cameras: two set oblique, one vertical — as shown above — click simultaneously at timed intervals. With each synchronized click, 425 square miles of terrain are photographed from horizon-to-horizon. In three hours, by flying parallel courses spaced twenty-five miles apart, these sky spies photograph 20,000 square miles.

Tri-metrogon photography is the fastest system yet devised for military map making by means of radial triangulation as modeled above.

Accurate map making with Fairchild Aerial Cameras is based upon precision controlled photography. Micrometic intervalometers space the photographs. Solenoids actuate the shutters simultaneously. And Fairchild's electronic trace tests assure precisely matched shutter speeds: Light actuated wire fingers trace lines on sensitized paper revolving at 1800 rpm. These lines record the length of time the shutter requires to completely open and completely shut. Checked against calibrated scales, these lines determine whether or not each Fairchild between-the-lens shutter performs within professional tolerances — *because shutter speeds*



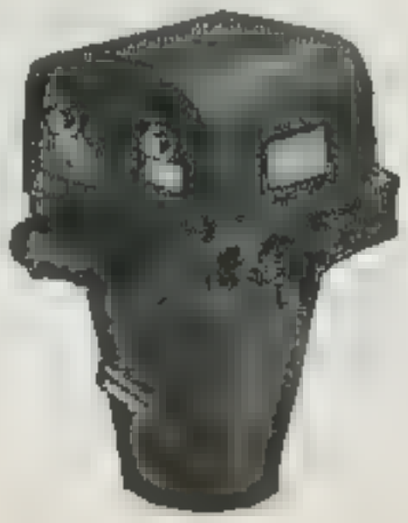
This is a typical 'electronic trace test.' Each pattern checks the actual length of time the shutter takes to completely open and completely shut against its rated speeds of 1/225 — 1/150 — 1/75. Sharp adherence to professional tolerances results in precisely matched shutter timing for synchronized operation and interchangeability.

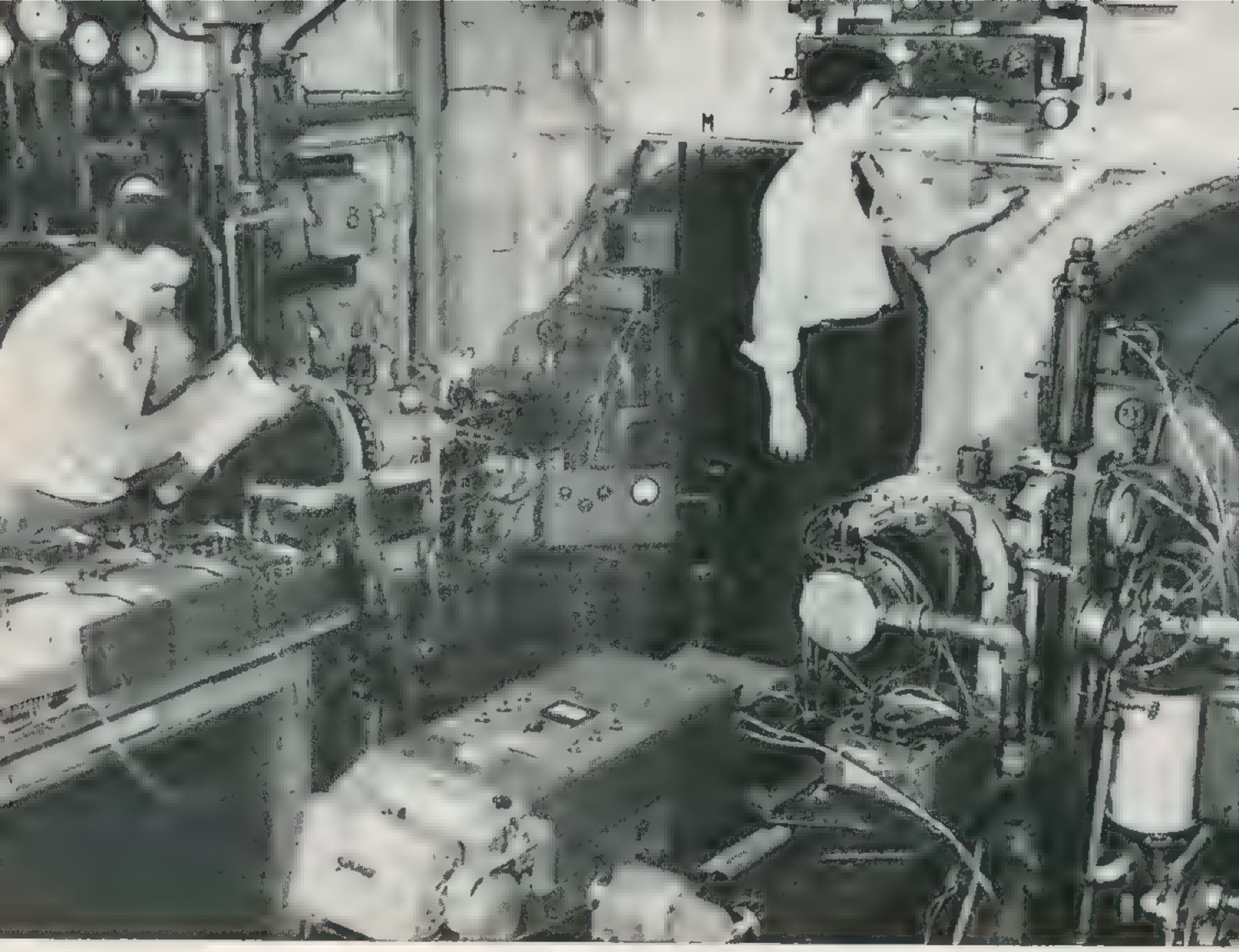
on a Fairchild Camera must mean exactly what they say!

Precisionized electronic and mechanical skill ranks Fairchild Aerial Cameras with the world's finest *professional* cameras — an achievement that is being paralleled in the production of aircraft sextants, radio direction finders, lead computing gun sights and other vital aviation equipment. *New York Office:* 475 - 10th Avenue, New York 18; *Plant:* 88-06 Van Wyck Boulevard, Jamaica 1, N. Y.

Fairchild CAMERA AND INSTRUMENT CORPORATION

Professional AERIAL CAMERAS





Original test setup for demonstration to the Army Air Forces

IT'S HERE! A-C FOR AIRCRAFT

. . . offering a drastic weight reduction, less maintenance, better performance at high altitudes, more safety features

ONLY a year ago, many competent engineers were sure it was impossible to parallel main engine-driven alternators to generate a-c power for aircraft. Technical difficulties arising from the varying speeds of the main engines were too great. Yet, last spring, G-E engineers tightened the last bolt, fastened the last wire, started the two aircraft engines in this laboratory—and had proof that such a system is practical.

The story of how it was done belongs in the pages of American aviation history. It's the story of engineering at its best—of the co-operation of highly skilled men from Sundstrand Machine Tool Company and General Electric, who combined their knowledge of hydraulics and electricity to achieve a practical a-c power system. You who have seen it on test know that before long this system will be ready for flight—that it measures up to the plans for it—that it's here at last! *General Electric Company, Schenectady 5, N. Y.*

PRECISION PRODUCTS
AND
ENGINEERED SYSTEMS
FOR AIRCRAFT

BUY WAR BONDS as your stake in America's future

GENERAL ELECTRIC

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Availability

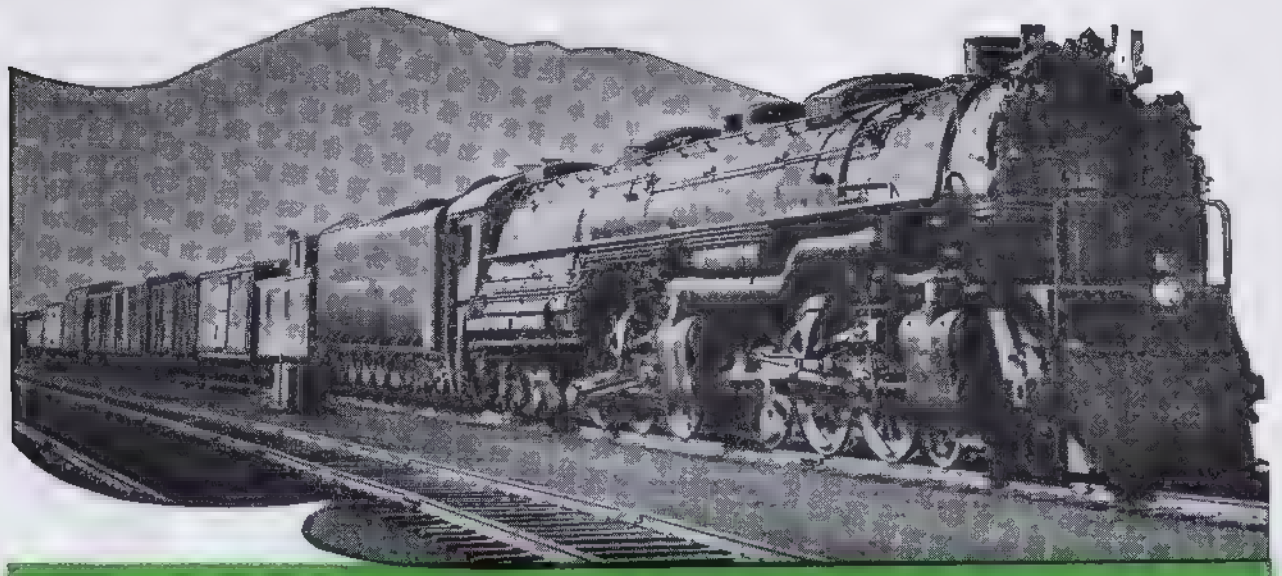
IS HIGHER

with Security Circulators

To help maintain the high standard of performance of Northern Pacific's big 4-6-6-4s, each of them is equipped with eight Security Circulators.

Compared with other locomotives, those with Security Circulators are available for continuous operation for longer periods because they have cleaner flues, longer arch life, and improved combustion, so that boiler maintenance is substantially reduced.

These advantages are in addition to an improved circulation of water over the crown sheet and in side water-legs.



AMERICAN ARCH COMPANY, INC.

SECURITY CIRCULATOR DIVISION

Doing the Job—

BALDWIN

MAIN LINE DIESEL-ELECTRIC LOCOMOTIVES

Baldwin-Westinghouse diesel electric locomotives for main line freight and passenger service, designed and built by Baldwin with Westinghouse electrical equipment, embody the engineering skill and quality construction that has been associated with the Baldwin name for more than a century. The 2000-hp. unit shown can be operated as a single locomotive or combined with similar units to form a 4000-hp. or a 6000-hp. locomotive, covering the entire power range required in modern main line railroad operation.

1600-hp. switching and transfer locomotive of a type now serving railroads from coast to coast.

Baldwin features include: Air throttle control, automatic wheel slip control, and thermostatic temperature control.

4-8-4 motor cranes hook up gives improved performance when starting with heavy loads.

BALDWIN-
LOCOMOTIVE WORKS, PHILADELPHIA

Westinghouse
ELECTRIC CORPORATION, EAST PITTSBURGH, PA.

IN the 1945 Red Cross drive, more than 12,000 Beechcrafters were offered a chance to contribute to the world-wide activities of the Red Cross. Every man and woman at Beechcraft gave to the Red Cross, setting a national record for large-scale unanimous Red Cross participation without known precedent or equal. Their response was

100%

This record is typical of Beechcrafters' response to the demands of total war. For more than three years, they have voluntarily put more than 20% of their pay into War Bonds. They have maintained one of the lowest absenteeism rates among all war industries. Most important, they have kept production on schedule every month since December, 1941.

Beechcrafters are proud of their 100% record. They intend to continue their 100% backing of the men and women of our Armed Forces, in every way, up to the day of final Victory in every theater of this war.

Beech Aircraft

CORPORATION

BEECHCRAFTS ARE DOING THEIR PART WICHITA, KANSAS, U.S.A.

STARTING LINE

Beginning with V-J Day and continuing through the plant clearance and inventory period, the Beech plant has lacked the sounds of production.

Now the sounds of rivet guns, presses, drop hammers, and compressors again are heard. The production of peacetime airplanes has begun at one end of the plant while the war surplus clearance goes on at the other.

The modest beginning of a production line shown above is like the first sign of Spring. It forecasts the future. Soon there will be several production lines operating, with new peacetime BEECHCRAFTS leaving them for all parts of the world, to contribute to the reconstruction efforts of all nations.

*

BEECHCRAFT invites inquiries about peacetime airplanes that will render the same class of ruggedness, dependability, and efficiency that has become the world-wide reputation of the BEECHCRAFTS built for the war. All types of BEECHCRAFT products will be designed and built in a way that will enhance BEECHCRAFT'S priceless reputation for quality products.

Beech Aircraft CORPORATION

BEECHCRAFTS DID THEIR PART

WICHITA, KANSAS, U. S. A.

WITH THE ARMED FORCES *Everywhere ..*

During the war Beechcraft received thousands of letters from members of our armed forces in training camps and on battle fronts everywhere. The following excerpts gleaned from just a handful of these letters are eloquent testimony of how well Beechcrafts did their part in the war. The same good opinion of Beechcrafts held now by service men and women will be earned also by Beechcraft's new postwar models.

Somewhere in the Pacific . . . You know I've never been any place yet where they don't have some Beechcrafts and I don't believe I'll ever find the place that doesn't have them. . . . H.R.S.; Amm 3/c

☆

Oahu, Hawaiian Islands: . . Get quite a thrill whenever I see an SNB (Beechcraft) over here. Was out at sea not long ago and had an opportunity to see them operate. . . . C.M.T.; PhoM 3/c.

☆

Okinawa: . . . I have seen several Beechcrafts in my trip and *they looked plenty nice.* . . . E.Y.; Cpl.

☆

Philippine Islands: . . Talked with some Air Corps boys, and I wasn't surprised when they said the Beechcraft is *the nicest riding plane they've ever ridden in.* Guess that's why the generals use them. . . . V.K.; Sgt.

☆

Corregidor: . . . I have seen Beechcrafts, from one to a dozen on about every island we have been to. They have really done a swell job. A first class machinist that is in our engine room, came off Corregidor when it fell, in one of them. He says an angel will never look any better to him than a Beechcraft. . . . K.L.S.; F 1/c

☆

China: . . . The one thing I want to do is to repair a Beechcraft, but that will probably never happen as the plane is one hell of a good ship. . . . R.J.S., Pfc

☆

Iwo Jima: . . . There's a lot of islands between here and Wichita, and on every one I haven't missed seeing a Beechcraft. . . . B.G.; S/Sgt

☆

Assam, India: . . . Even now in C.B.I. and ATC operations, I see the (Beechcraft) C-45 and AT-7 in constant use, and everything has been in *perfect agreement* wherever I go as to quality and performance. . J.R.B.; 1st Lt

☆

Myithyina, Burma: . . . A buddy of mine over here is a former Beechcraft AT-11 pilot for bombardier training. We've both flown the 11's and also the 7's and I might say that they are the finest and *easiest handling ship the Air Corps have.* . . . W.T.R

☆

Admiralty Islands: . . . Recent pictures of Beech planes around the globe remind me to inform you that even here in the Admiralties Beech is doing its part — and well, for daily one can see on the line GB-2's, and even C-45B's. The entire flight crew has a good word for the plane. . . E.T.A.; Lt. (jg)

☆

In the Atlantic: . . . No matter where I go you will see a Beech and we have been in some rather remote spots. Lots of planes come and go but every one stops to see a Beech take off or land. . . . P.W.W.; AMMF 2/c

☆

Greenland: . . . Ours was one of the first of the Arctic Search and Rescue squadrons, and now and then we would get calls from a ship which was lost. We had two Beechcraft AT-7's stationed there and they were pressed into service on the rescue missions *They performed wonderfully well.*

☆

North Africa: . . . Rarely do I find an Army, Navy or Marine flier who at some time did not train in a Wichita plane. Everywhere I fly I find *Beechcrafts doing their part and more.* Beechcrafts are working every day all around the world. . . . C.R.; Lt.

☆

France: . . . I saw an AT-11 (Beechcraft) the other day. I know you would have been pleased with many favorable comments it evoked from both the pilots and the mechanics. It seems to be a characteristic of most of those gentlemen to find fault with any and all transient ships but *they hadn't anything but good to say for "your baby."* . . . C.K.

☆

Germany: . . . Over here Beechcrafts are thought very highly of. They are known as the *limousine of generals.* Reliable enough for a general and when a guy who has his choice like that picks them you know the plane is good. . . . R.D.P.; Cpl.

☆

Panama, Central America: . . I have been in several places in Central America seeing good old Beechcrafts every place. . . . J.W.D.; Cpl.

☆

Florida: . . . The general at the camp in Florida where I am stationed has a UC-45 which makes me homesick for Beechcraft each time I see it. I've even had a ride in it — *it's really a swell plane.* . . . V.M.B.; Pfc.

☆

Texas: . . . Beech is the nicest place I have ever worked in my life, and not only that, but *the pilots say the AT-11 is their favorite ship.* . . . V.J.K.; Cpl.

☆

California: . . . The pilots like the Beechcrafts and the ones who ride in them give many compliments . . . *the reputation Beech has built in the past will pay off* in the post war years. . . . E.H.C.; AMM 2/c

☆

Costa Rica: . . . I certainly like the Beechcraft. So do all the pilots. . . . V.L.T.; S/Sgt.

☆

Note: Originals of these letters are on file at the Beech Aircraft Corporation's office in Wichita.

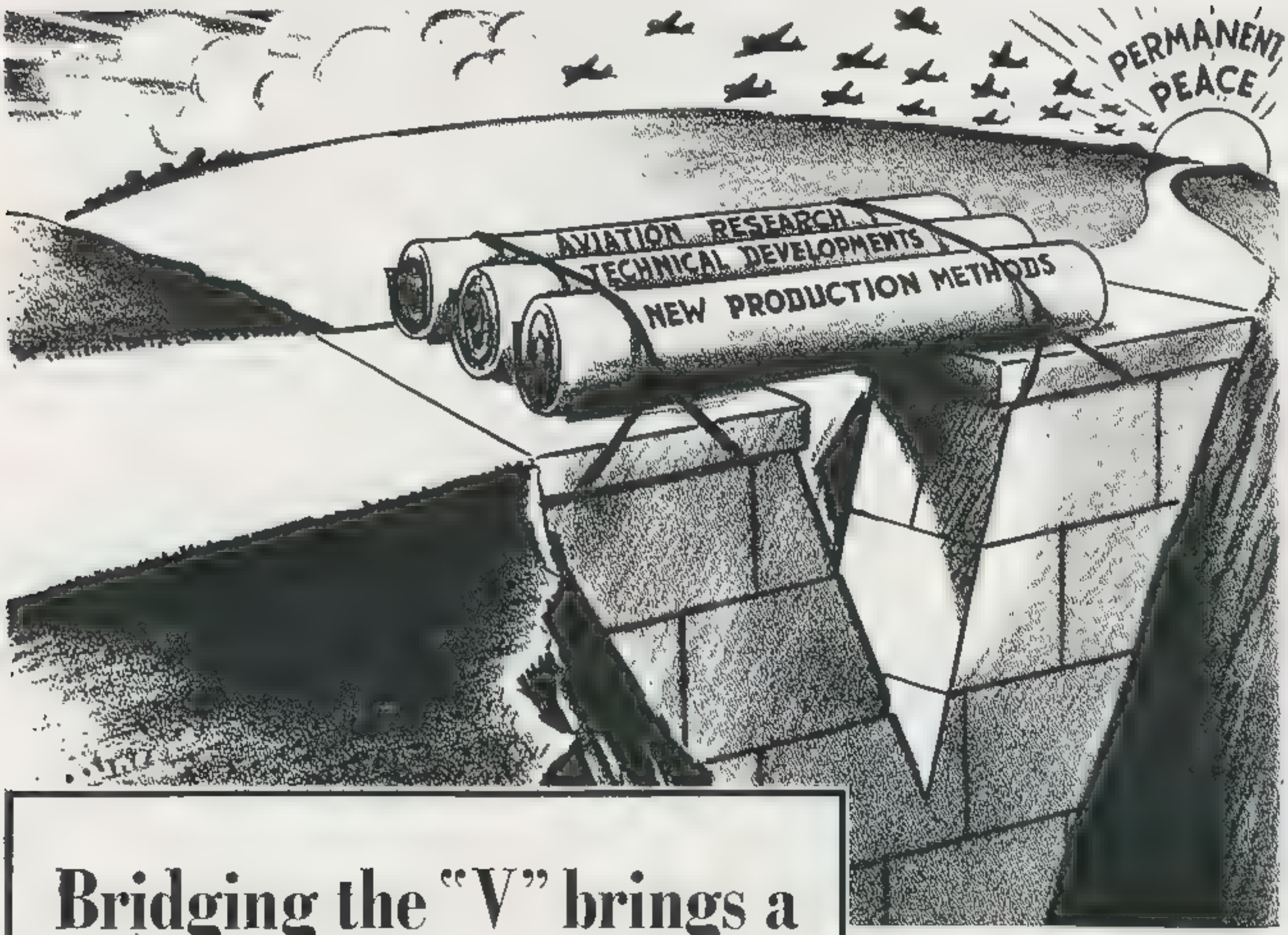
Beech Aircraft

CORPORATION

BEECHCRAFTS DID THEIR PART

WICHITA, KANSAS, U. S. A.

This is the fifth in a series of advertisements concerning the future of Aviation . . . in America



Bridging the "V" brings a New Challenge to Aviation

THE Aviation Industry shares responsibility with Private Citizens, American Business and Government in making our nation the world's greatest peacetime air power. Only if we are such a power can we look forward to permanent Peace and National Security. For modern aviation has ended all thoughts that the United States is an isolated nation.

Under wartime necessity, the advancement of American Aviation was one of the great industrial miracles of all times.

Now the challenge of peace provides an even greater stimulus to carry on the kind of *scientific research, technical developments* and *production methods* that in a few short years made our air power a decisive force in the achievement of Victory

For the aircraft of today and tomorrow should be used for the advancement of civilization, not for the destruction of mankind.

At Bell Aircraft our sights are aimed at putting into civilian service the same types of aeronautical skills and achievements as were identified with the Airacobra, the Kingcobra, the Bell-built B-29 Superfortress and the Airacomet . . . America's first jet propelled plane.

Bell Aircraft pledges to the Citizen, to Government and to American Business that we will intensify our research and scientific development programs. Soon we shall bring to them a new form of flying . . . the Bell Helicopter . . . "The Modern Magic Carpet"* that offers door-to-door delivery . . . that can fly to and land in inaccessible spots reached by no other mode of travel . . . a helicopter with built-in, engineered stability. As in the past, now in the present, look to Bell Aircraft to be the civilian pacemaker of Aviation Progress.

**Reg. Applied for U.S. and principal Foreign countries*

BELL Aircraft CORPORATION

Buffalo 5, New York

© Bell Aircraft Corporation

PACEMAKER OF AVIATION PROGRESS

Finish the Fight — with War Bonds

Double trouble—for Japs

Bombs are away . . . bomb-bay doors closing on those empty twin caverns in the big ship's maw. In 40 seconds a shattering explosion will occur in a Japanese factory, 25,000 feet below. . . ."Mission accomplished."

The Boeing B-29 Superfortress is designed for a vital purpose: to carry a big load of explosives farther and faster, with the ability to fly at higher altitudes, than any other bomber in the world.

The huge, double bomb-bays are the B-29's reason for being. Around them Boeing engineers have built a great airplane. But the superb, aerodynamically clean wing and body, the turbo-supercharged engines, the pressurized cabins, the remote-control guns all serve one goal—*to deliver the bombs.*

Today Superfortresses of the 20th Air Force are pounding enemy industry with steadily mounting fury. In a single day the big planes have roared in over several different targets, from Singapore to Nagoya, and let go tons of destruction.

Manning the B-29 squadrons are picked crews — skilful, cool-headed and courageous — as fine a body of flying fighters as can be found on earth or in air. The Superfortresses, like the Flying Fortresses, represent Boeing's effort to give American airmen the best possible weapons for accomplishing their difficult and hazardous missions.

When final victory is achieved, Boeing's broad experience in research, design, engineering and manufacture will once more be applied to peacetime aircraft. Of any such product you can be certain . . . if it's "Built by Boeing" it will lead the way.

DESIGNERS OF THE B-29 SUPERFORTRESS • THE FLYING FORTRESS • THE NEW STRATOCRUISER
THE KAYDET TRAINER • THE STRATOLINER • PAN AMERICAN CLIPPERS

BOEING

Army Ground Forces airborne troops loading a Boeing C-97 Transport

Finish the Fight — with War Bonds

Super-transport

The new Boeing C-97 Army Transport, military version of the mighty Stratocruiser, has already made world headlines by its record-shattering coast-to-coast flight. Crossing the continent at an average speed of 383 miles per hour is big news. But there are other facts about this versatile airplane that are just as startling. Among them are *payload capacity and low operating cost.*

In post-war service the Boeing Stratocruiser, accommodating 72 to 108 passengers, will make possible more comfort, safety and economy for air travelers. Cross-continent delivery of "red-ball" freight on a one-day schedule can also be regular procedure. And both fares and cargo rates can be reduced. High cruising speed, great carrying capacity and ease of loading and maintenance give the Stratocruiser amazingly low direct operating costs.

As a military transport, the C-97 can carry 120 fully armed troops; or several score litter cases with medical attendants; or two medium-size trucks, plus other cargo. Furthermore, the trucks can drive right in, using a built-in ramp at the rear of the plane

Special equipment cuts loading time to a minimum. The airplane's self-contained electric power-hoist picks up heavy freight and positions it wherever wanted in the upper deck. At the same time, the two lower-deck compartments can be loaded through side doors.

The aerodynamic advancements built into this first true super-transport of the future are the result of Boeing's long experience in the design and production of four-engine aircraft—the Flying Fortress and Superfortress—the Boeing Stratoliners operated by TWA and Pan American, and the Pan American transocean Clippers.

After victory, Boeing leadership in research, design, engineering and manufacture will bring you the Stratocruiser and other forward strides in air transport. You can be sure . . . if it's "Built by Boeing" it's out in front.

DESIGNERS OF THE B-29 SUPERFORTRESS • THE FLYING FORTRESS • THE NEW STRATOCRUISER
THE KAYDET TRAINER • THE STRATOLINER • PAN AMERICAN CLIPPERS

BOEING

The FRIENDLINESS of Flight

International flight fosters international friendships. As air service expands there will develop closer relationships, and better understanding among people and nations.

Coordinated air service, such as planned by Braniff Airways between the Americas, will weld together in good will the people of the Western Hemisphere. Increased trade with all its benefits will surely follow.

BRANIFF AIRWAYS

● Here is the cross-section of a new, improved railroad rail.

It looks very much like any other rail. Actually, it has basic advantages, proved by more than three years' testing on thirty miles of Burlington main line.

This is the Torsion-Resisting Rail ★— created by Burlington engineers. It is important, not only for what it is, but for the particular kind of railroad progress which it typifies. For like so many of the vital railroad improvements which have become realities over the years, this Torsion-Resisting Rail lacks the glamor to bring it into the spotlight of public attention and acclaim.

Railroading is like that. For every improvement you see, there are dozens you never notice. But they're on the job—in the cause of better transportation.

And that's how it is with this new Torsion-Resisting Rail . . . which the Burlington offers as a significant contribution to better railroading for all America.

★What the Torsion-Resisting Rail Offers:

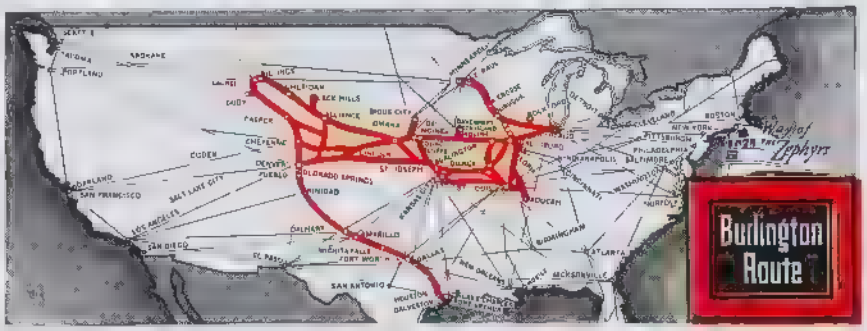
1 • Narrower head. Less leverage exerted by wheels.

2 • Stronger fillets for greater strength.

3 • Better weight distribution permits greater height, resulting in substantially increased stiffness of rail. This distributes load more evenly over more ties.

4 • Permits improved joint bar design.

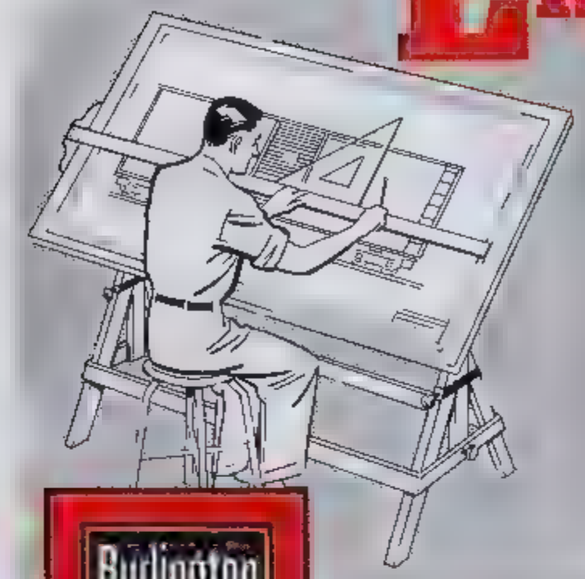
an essential link in transcontinental transportation



BURLINGTON LINES • *Everywhere West*

CHICAGO, BURLINGTON & QUINCY RAILROAD • COLORADO and SOUTHERN RAILWAY • FORT WORTH and DENVER CITY RAILWAY
THE WICHITA VALLEY RAILWAY • BURLINGTON-ROCK ISLAND RAILROAD

Engineered Planning



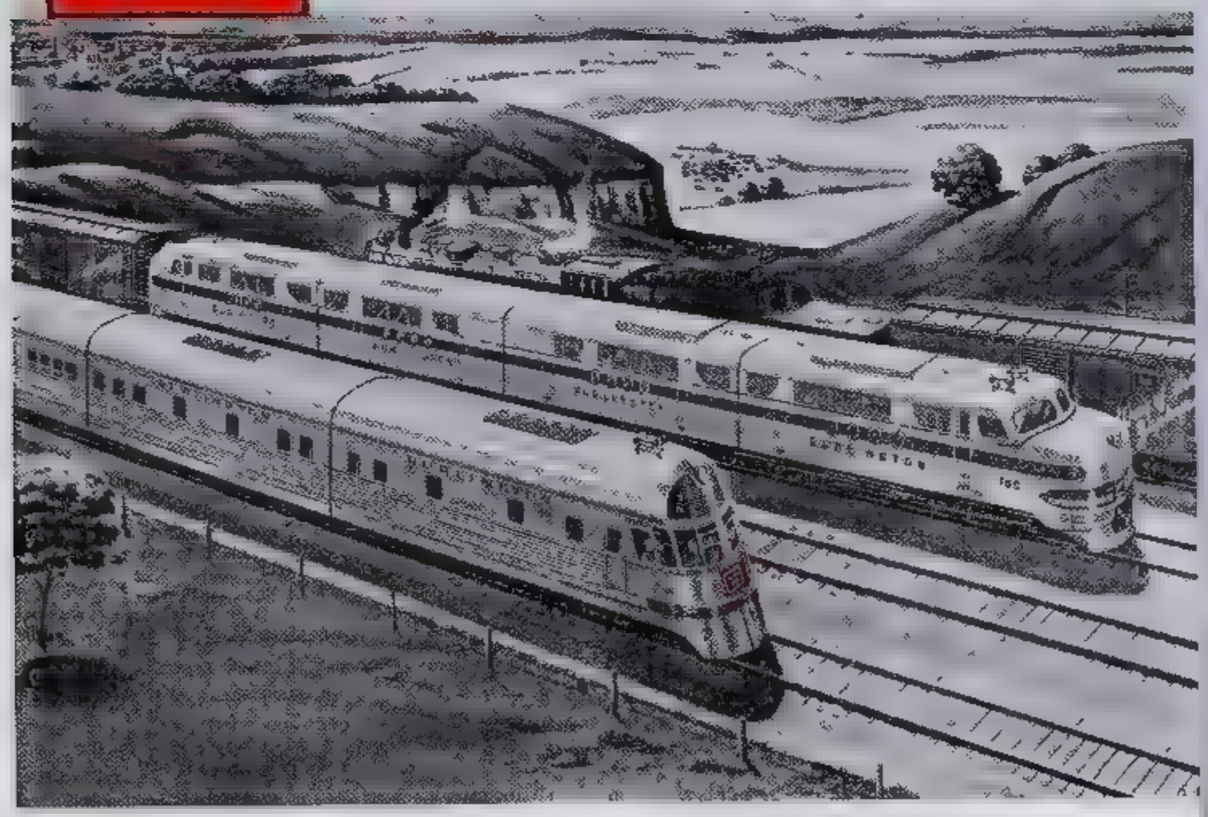
● You hear a lot about planning these days Planning new ways to speed Victory — planning for vast postwar improvements. On the Burlington, engineered planning is an old story — a daily task that has achieved magnificent results. It was engineered planning that built the first 12 miles of Burlington Railroad in a little over one year, a tremendous achievement, in 1849 and 1850 · engineered planning that built the nation's first railway post office car designed for sorting mail in transit in 1862 and operated it over what is now the Burlington's main line across Missouri. It was this sort of foresight that enabled the Burlington to undertake the handling of the trans-continental mail between Chicago and the Missouri River on one day's notice, in 1884—and has held this movement to Burlington rails from that day

Engineered planning has made the Burlington a major carrier, between eastern and western railroads, between the Pacific Northwest and the Gulf States· has extended it into many of the major cities of the great Middle West and Southwest—has given it over 200 interchange points with other railroads. Burlington's engineered planning introduced America's first Diesel powered streamlined train in 1934, the Pioneer Zephyr, giving America a new era of high-speed railroading

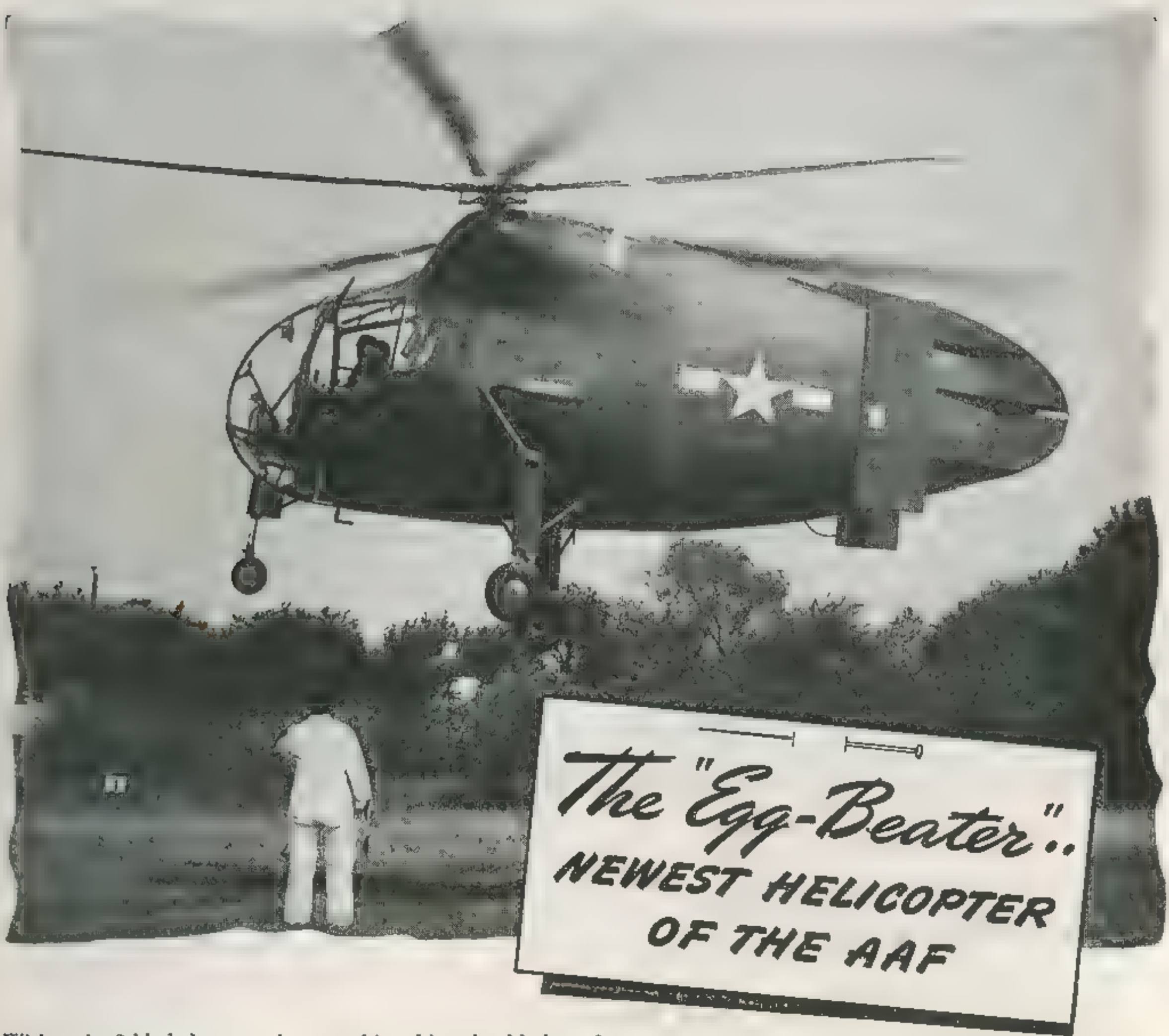
It was this constant searching for better ways to help provide America with the world's best transportation that led the Burlington to install long stretches of centralized traffic control on strategic sections of its line, to augment its large fleet of modern steam locomotives by the addition of 16 huge Diesel electric freight locomotives in a single year to acquire 71 Diesel switch engines, to construct new mammoth classification yards at Galesburg, Illinois, and Lincoln, Nebraska, and modernize other important transfer terminals, to further analyze the needs of shippers and act on that analysis. Engineered planning on the Burlington has led to extensive experiments in the use of radio to improve train operation

Yes, planning is an old story on the Burlington and its success is attested to by the fact that it has never been in the hands of a receiver and has paid dividends each year since 1864

H. L. FORD • *Freight Traffic Manager, 547 W. Jackson Blvd., Chicago*



Through its 22 principal gateways and more than 200 interchange points, the BURLINGTON serves as an essential link between railroads from the East, West, North, and South



The "Egg-Beater".. NEWEST HELICOPTER OF THE AAF

With twin 3-bladed rotors intermeshing like the blades of an egg beater, the Kellett XR-8 presents a new and novel design in helicopters. A purely experimental model built for the Army Air Forces, the XR-8 has the advantages of greater power efficiency, reduction of vibration, reduced drag, and reduced power transmission requirements.

Reports from test pilots indicate that it is highly maneuverable, and since the rotors revolve in opposite directions, there is no need for a tail rotor to counteract torque. While no performance figures have been released, the ship is powered by a Franklin air-cooled 245 h.p. engine using CECO fuel pumps.

Chandler-Evans is proud to have a small part in this new step in helicopter development. And as Chandler-Evans has always kept abreast of the newest and latest in America's other great war planes, so will it continue to serve the aviation industry when once again it turns to peacetime production.

The Kellett XR-8 has all the remarkable helicopter characteristics of vertical rise and descent, ability to hover, and to fly backwards and sidewise as well as forwards. (Kellett Aircraft photo).

CECO

CARBURETORS
FUEL PUMPS
PROTEK-PLUGS

CHANDLER-EVANS CORPORATION

SOUTH MERIDEN
CONNECTICUT, U.S.A.

"Now you see it—Now you don't..."

a Machine Shop in a Burma Jungle"

Based on a true story taken from the war records of the Curtiss Commando

A Zero Strikes . . . and one of our bombers is down in the wilds of Burma, badly shot up. Repair parts must be had at once! By land routes, it takes weeks or even months to get help in. But there's one chance . . . an S.O.S. for a *flying machine shop.* And presto! There it is! A Curtiss Commando, equipped with a complete machine shop . . . from heavy drill presses to welding equipment . . . a huge power plant . . . spare parts . . . and a crew of mechanics. In record time, all four engines are purring smoothly. The bomber is ready for another blast at the enemy. And the Commando is off on another rescue flight "somewhere" in the China-Burma-India theater. Here's another reason why pilots say, "When it comes to carrying *loads* and getting there, it pays to *Fly Commando!*"

THAT'S WHY I WANT TO WORK FOR THE AIRLINES THAT WILL

Fly Commando!

Ace-high Comfort aboard a smooth-flying Commando is sure to delight your passengers, whether they play bridge, dine or just nap. And the Commando's unusual aerodynamic cleanness, coupled with the power of Wright Cyclone 18 engines, makes it much faster than any of today's airliners.

On the Nose! Flight stops are shorter when you Fly Commando, because the Commando is so much more accessible for easy servicing. Here a mechanic opens the nose cone access door by means of three quick-type fasteners. Through this door, he has ample room to check all units forward of the instrument panel, quickly and comfortably.

Over Six Tons of heavy machines and men are handled easily by this flying machine shop. Think what that will mean for the airlines that Fly Commando! When it comes to carrying greater pay loads . . . on the medium-range flights which make up the majority of daily airline hops . . . the Commando will be first on the list of profit-producers.

THE CURTISS

Commando

Today's Great Lifeliner
Tomorrow's Great Airliner

Curtiss

Wright

FIRST IN FLIGHT

Ready Made Airports

The Gifts of Nature

Thousands of Lakes a "Natural" for Floatplane Flying . . .

Nature began building airports for float planes millions of years ago. They are the natural lakes of the world, so numerous even the map makers haven't counted all of them as yet.

Lakes form a close-linked chain of airports in every mountain range. In the wilds or near cities, they are the centers for sports and vacations, the first areas to develop. You can fly where and when you want to, if you use lakes for flying.

The "fun appeal" of water flying means more business for aircraft sales, school operations and charter service. Floats are economical and convenient with no problems of real estate, grading and surfacing. You will enjoy flying more or make more sales, if you take advantage of these gifts of nature.

NOW BEING PRINTED

Send for your copy today

This free booklet on "Air Harbors" is yours for the asking. Soon to be available, it describes float plane opportunities for private pilots, cites figures and layouts for flight schools and sales bases. A card or letter to the address below will reserve a copy for you.

Edo *Master Float Makers*

AIRCRAFT CORPORATION 512 Second Avenue College Point, Long Island, N. Y.

Eimac TUBES — THE COUNTERSIGN OF DEPENDABILITY IN ANY ELECTRONIC EQUIPMENT

Electronics

A SALES ADVANTAGE AT POINT OF PURCHASE

The pressure of postwar competition will force many changes in manufacturing methods For example, the food processor who uses electronic heat to sterilize packaged goods will have a potent sales advantage over the one who does not. In addition, other electronic processing methods may result in economies which will affect selling price and profits.

Investigate electronics now... and give preference to the equipment which uses Eimac electron vacuum tubes. You'll get a double guarantee of dependable performance... one from the equipment manufacturer and the second from Eimac whose facilities and reputation are second to none.

Outstanding performance and dependability have made Eimac tubes first choice of leading electronic engineers throughout the world

FOLLOW THE LEADERS TO

Eimac TUBES

EITEL-McCULLOUGH, INC., 1075 San Mateo Avenue, San Bruno, Calif.

Plants located at: San Bruno, Calif. and Salt Lake City, Utah

Export Agents: Frazar & Hansen, 301 Clay St., San Francisco 11 Calif., U. S. A.

GET ELECTRONIC TELESIS— *Don't overlook sending for your copy of Electronic Tele — a 64-page illustrated booklet covering the Science of Electronics, in layman language. There is no cost or obligation.*

Eimac TUBES THE COUNTERSIGN OF DEPENDABILITY IN ANY ELECTRONIC EQUIPMENT

Electronics

AN IMPORTANT FACTOR IN COMPETITIVE SELLING

Fabricating of rubber goods—tires or tennis shoes—with electronics may provide not only a better method, but also a sales advantage either in price or quality or both. Today you cannot safely overlook the advantages which will be held by the competitor who employs electronics.

In selecting electronic equipment for your application, give preference to that equipped with Eimac electron vacuum tubes. You'll get a double guarantee of satisfaction—one from the equipment maker and the second from Eimac. Furthermore, you'll have the benefit of Eimac facilities and experience. Remember: The vacuum tubes are the heart of any electronic equipment.

Outstanding performance and dependability have made Eimac tubes first choice of leading electronic engineers throughout the world

FOLLOW THE LEADERS TO

Eimac TUBES

REG. U. S. PAT. OFF.

EITEL-McCULLOUGH, INC., 1076 San Mateo Avenue, San Bruno, Calif.
Plants located at: San Bruno, Calif. · and Salt Lake City, Utah
Export Agents: Frazar & Hansen, 301 Clay St., San Francisco 11, Calif.; U. S. A.

GET ELECTRONIC TELESIS—*Don't overlook sending for your copy of Electronic Telesis—a 64-page illustrated booklet covering the Science of Electronics, in layman's language. There is no cost or obligation.*

from America's Largest and Finest TOY SHOP

For more than eighty years F. A. O. SCHWARZ has been America's largest and leading TOY SHOP. To four generations of children in every state of the Union the name SCHWARZ has become synonymous with Christmas and Santa Claus. SCHWARZ has always been known for the wide variety, incredible quality and fair prices of its toys. SCHWARZ is always first with the UNUSUAL in toys, books and games.

E 3 ... $6.95

E 4 ... $4.95

E 5 ... $4.75

E 6 ... $2.50

E 7 Basket Ball Game ... $4.95

E 8 ... $3.95

E 9 ... $18.75

E 10 ... $3.00

E 11 ... $2.25

F.A.O. SCHWARZ

40 NEWBURY ST., BOSTON 16, MASS. | 745 FIFTH AVENUE, NEW YORK 22, N. Y. | ARDMORE, PA.

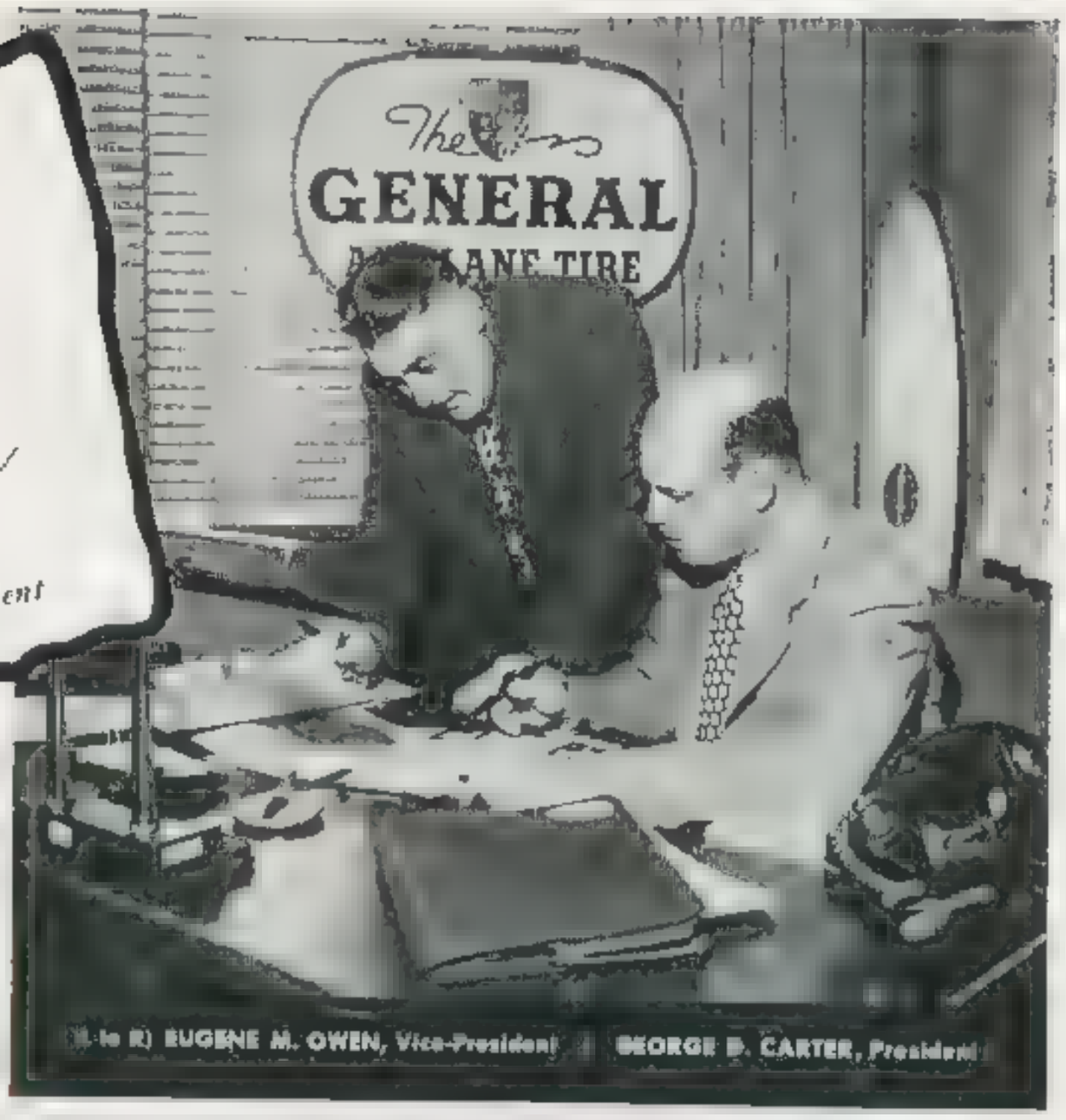
"..we sell General Airplane Tires with complete confidence of delivering safety..service ..satisfaction"...

AETNA AIRCRAFT SALES & EQUIP CORP.

Eugene M Owen

Vice-President

The GENERAL AIRPLANE TIRE



These men know there is no substitute for the *Top-Quality of* GENERAL TIRES

Why do the best informed supply men . . . top-flight pilots . . . safety-wise commercial operators insist on General Airplane Tires? Because there's no substitute for General's *proved* Top-Quality . . . extra safety.

It's General's kind of quality that makes tire safety . . . performance and extra-durability a *known* quantity in aviation.

General's leadership in design, plus quality-control that begins in General's own cord and rubber mills, keeps General Tires always ahead-of-the-field . . . always your safest tire specification.

AVIATION DIVISION

THE GENERAL TIRE & RUBBER CO. · AKRON, OHIO

In the air—where quality can never be compromised —you'll find General Aviation Tires in every service.

General's entire manufacturing career has been devoted to building America's finest . . . and safest tires. Today . . . more than ever . . . Generals maintain their 30-year reputation as America's true Top-Quality . . . extra-performance tires.

Wherever you see General Tires in use you *know* that quality and safety standards are the best.

THE GENERAL TIRE & RUBBER CO. • AKRON, OHIO

THE GENERAL TIRE THAT FLIES WITH UNITED

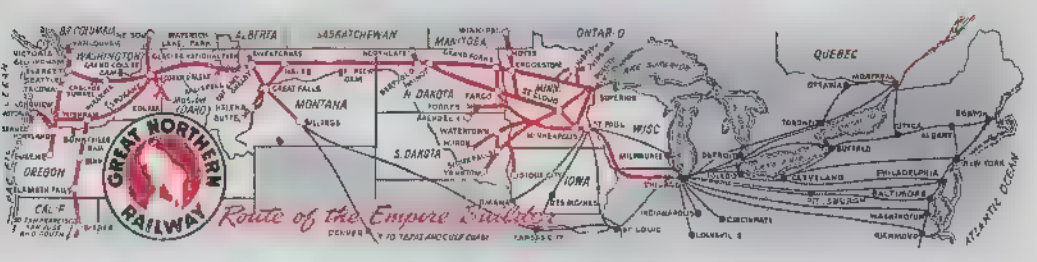
Air travel, too, depends upon General's Top-Quality . . . extra-safety . . . unchallenged 30-year reputation for quality tire leadership.

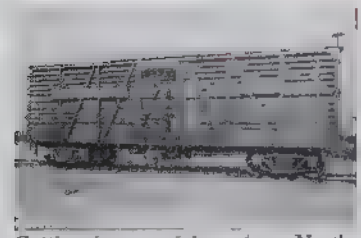
The GENERAL AIRPLANE TIRE

KNOWN ROUND THE WORLD FOR QUALITY AND SAFETY

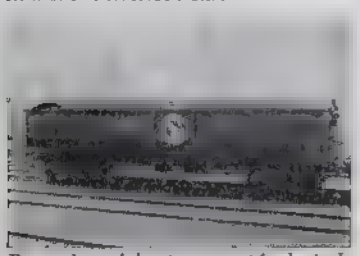
GREAT NORTHERN RAILWAY

BETWEEN GREAT LAKES AND PACIFIC





Cattle, sheep and hogs from Northwest farms and ranches go to markets in modern livestock cars



Rugged gondolas transport fuel, steel, sugar beets, sand and gravel.

Military, industrial and agricultural machinery, poles and timbers move over Great Northern on heavy-duty flat cars.

SPECIFIC TRANSPORT JOBS REQUIRE RIGHT KINDS OF CARS

Diversified Equipment Marks Great Northern's Large Freight Car Fleet

Like the Navy's ships, Great Northern's freight cars are of various types. Each is built for a specific transportation job.

In Great Northern's freight fleet, which is doing battle duty on the Victory road these days, the familiar "box" predominates. An increasing number of the railway's box cars are of plywood-steel construction. Light and rugged, these cars are tiptop for grain, finished lumber, and many other kinds of freight.

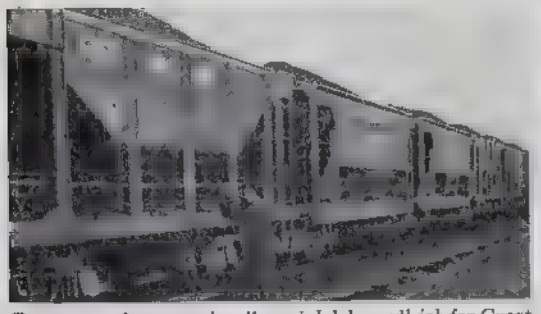
Another special "breed" of rolling stock is Great Northern's 75-ton-capacity iron ore car. Thousands of these husky, hopper-type cars are required for the railway's movement of ore from the Minnesota range to Lake Superior vessels.

For safe transportation of tremendous quantities of perishable foods from and to its territory, Great Northern provides a fleet of modern refrigerator cars.

Great Northern's freight fleet also includes livestock cars, flat cars, gondolas and hoppers—the right kind of equipment for every kind of transport requirement.

Having the right car for every job is one of the many things which make Great Northern great

Producers of perishable freight such as choice fruit, vegetables and fish depend upon Great Northern's modern refrigerator car service



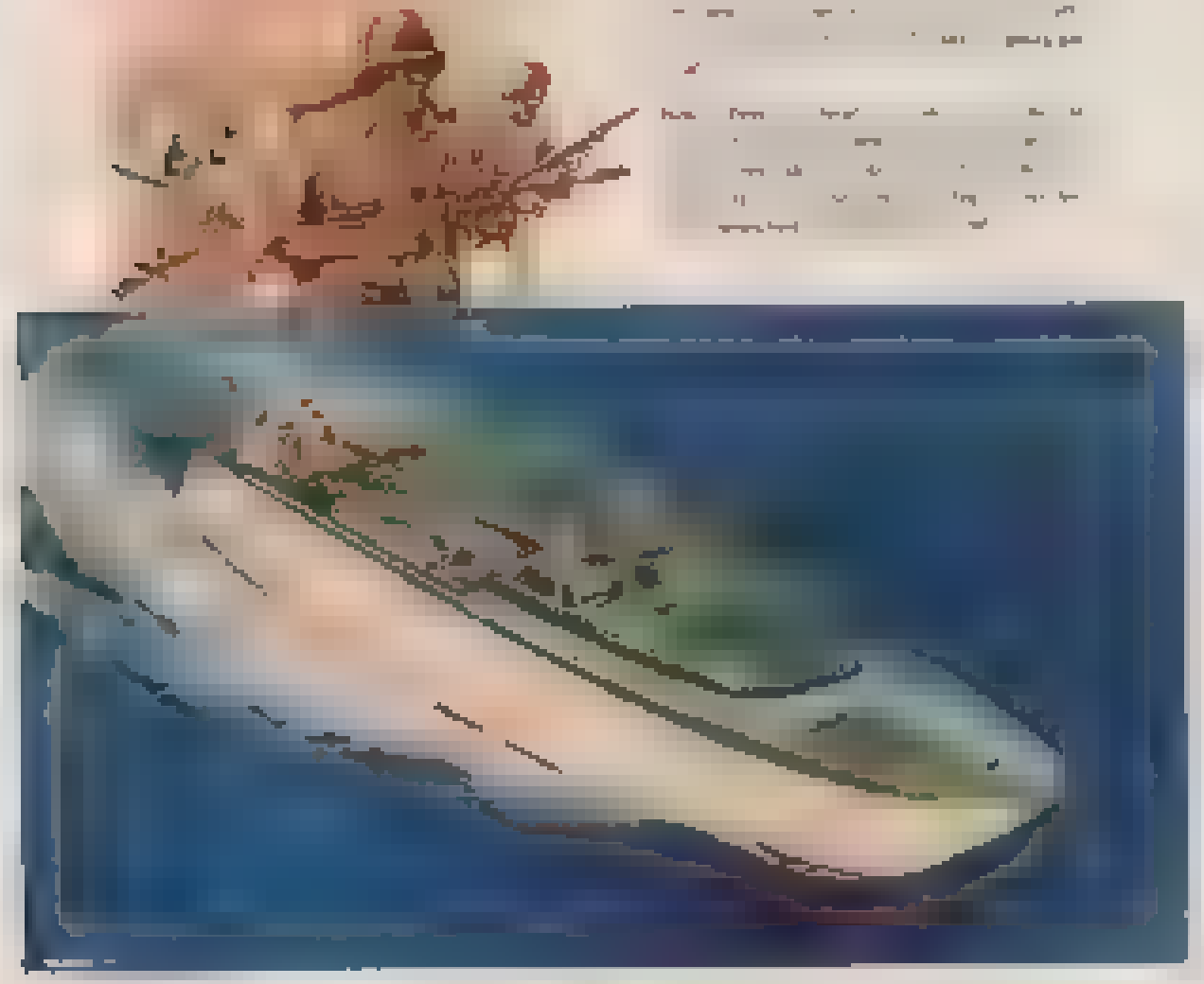
Transport of iron ore is a "special delivery" job for Great Northern. Several thousand of these 75 ton-capacity ore cars are in service on Minnesota's world famed Iron Range.

Great Northern pioneered quantity construction of plywood-steel freight cars. Light, but sturdy, these cars are ideal for grain, forest products and merchandise.

WORLD'S FINEST BOATS BY THE WORLD'S LARGEST BUILDER

The Marines are

telling us!



[illegible] IS ONE OF A FAMILY OF Higgins

ANY SMOKESTACKS TO PAINT?

The tricky job of painting high smokestacks is one of many suggested to us for helicopters to handle. All that would be needed is a hose and nozzle leading from a paint tank inside the fuselage, operating while the aircraft leisurely circles the stack from top to bottom.

An apple-grower writes us, outlining the possible advantages of helicopters to dust his orchards.

A South American government would like a fleet of helicopters, in order to annihilate with sprays the swarms of locusts which now destroy valuable crops.

Ranches want helicopters for such work as taking cattle censuses on their vast ranges—dropping salt for their grazing stock—delivering fresh grub to distant round-up crews in rough country.

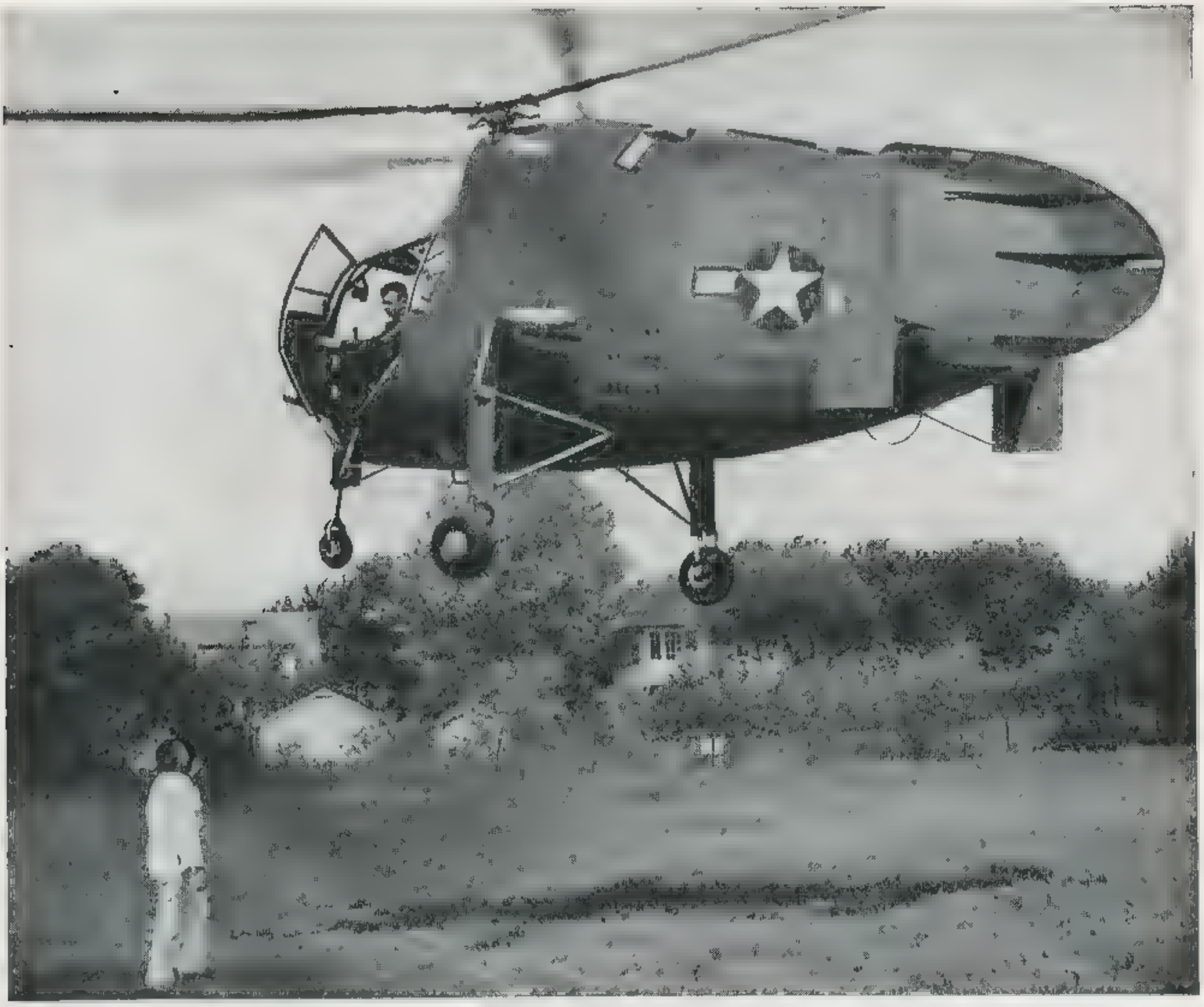
Hundreds of business executives have written to us here at Kellett Aircraft, to point out ways in which they think postwar helicopters might be useful. Questions of weight, range, cost and mechanical reliability make some of those ideas impossible to execute at the present stage of helicopter progress.

However, the number and diversity of these proposals impress us with the future possibilities of an aircraft which can hover or take off from, and land vertically in, any area large enough to permit the sweep of its revolving rotor blades.

We continue our part of the job as designers and engineers, confident that, with further development of helicopter types, American businessmen will determine many applications in transport and industry where only the helicopter can serve to cut costs, give dependable service and make work more productive. In consultation with such executives, our development program is taking shape today.

Kellett Aircraft Corporation, Upper Darby (Philadelphia), Pennsylvania.

★ KELLETT HELICOPTERS ★



ALL IN THE DAY'S WORK

A helicopter can easily hover low enough for pilot and passengers to talk with people on the ground nearby. The Kellett XR-8 helicopter, shown above, "stood still in the air" by the hour, at only *one foot altitude*, during its test period. When all was ready, restraining cables were loosed and its cross-country flying career began.

The XR-8 can fly forward, backward or sideways. It can rise or descend vertically, permitting take-offs and landings in any space large enough for safe clearance of its own blades.

Kellett has been active in the design of rotary wing aircraft—helicopters and autogiros—for over 16 years. More advanced models than the XR-8 are on Kellett drawingboards and in Kellett workshops today.

The final word in helicopter design will not be written for some time to come. Many engineering problems must be solved before helicopters are brought into practical daily use. Progress already achieved, however, more than justifies the man-hours that must still be spent by Kellett and other organizations active in this field. Their objective is to make helicopters available for exacting travel and transport jobs, in areas and under conditions where no other air, land or water craft can operate.

Kellett Aircraft Corp., Upper Darby (Philadelphia), Pennsylvania.

KELLETT

THE KELLETT XR-8 HELICOPTER

Just released by the Army Air Forces, this photograph illustrates a new product whose evolution toward important peace-time achievements has been stimulated by the urgency of war.

The XR-8 is the first American helicopter successfully tested in flight to embody the principle of an *intermeshing twin set* of rotor blades. Structural vibration, long an obstacle to progress in rotary-winged craft, is largely removed. Many related problems have been solved. The need for long power-transmission shafts is eliminated. Weight and drag are saved, increasing pay-load.

Its whirling "egg-beater" vanes enable the XR-8 to fly forward, backward or sidewise with unusual efficiency. Like a hummingbird, it can hover motionless in the sky, or only a few feet above ground. Its vertical take-off and descent permit operation to or from any space that gives safe clearance to the sweep of its own blades.

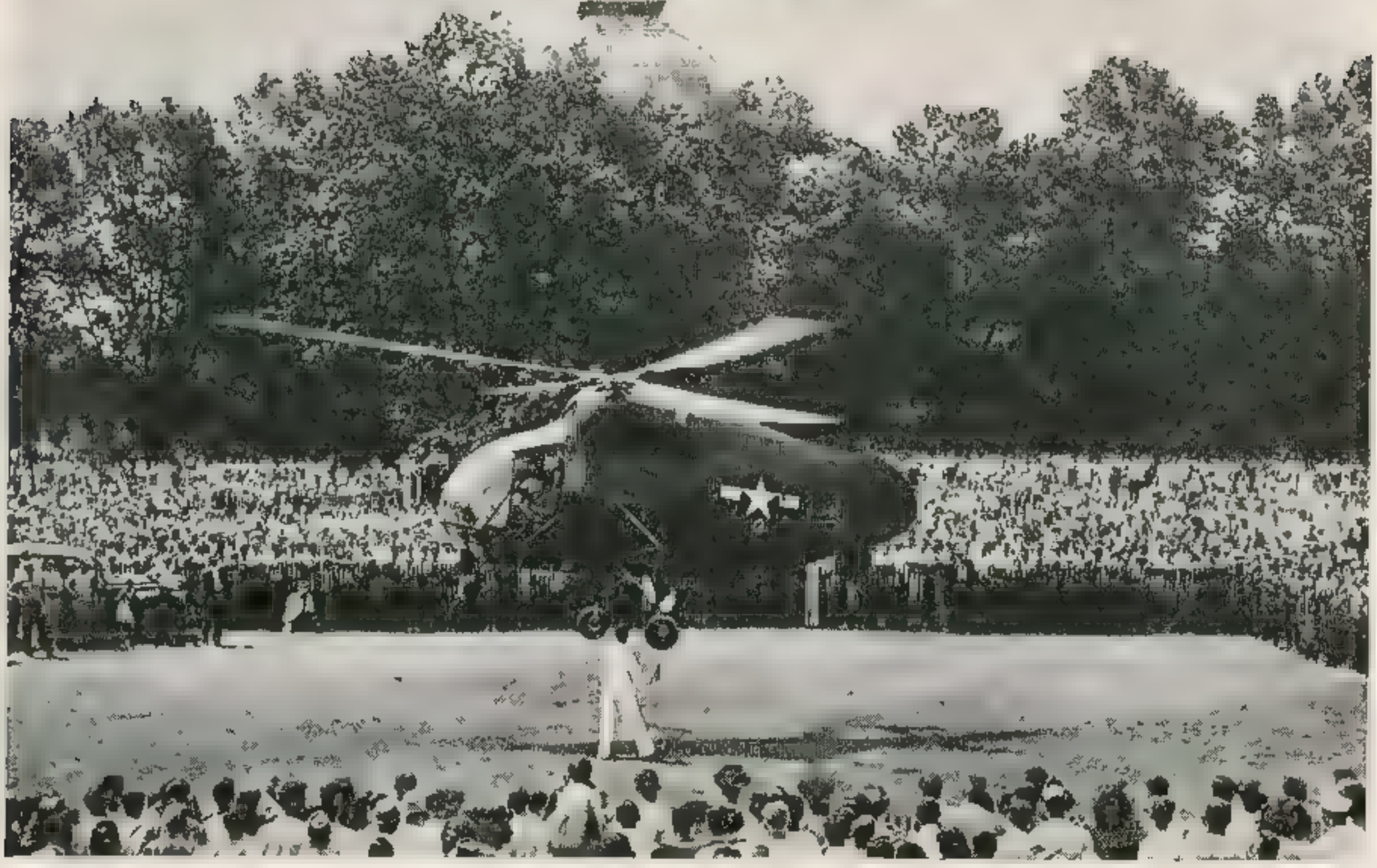
With sixteen years of design and engineering experience in autogiro and helicopter development, the Kellett organization believes that helicopters will perform a wide range of useful jobs in the new air world of tomorrow.

"Answering Some Helicopter Questions" gives interesting facts about "wingless flight." For free copy, write to Kellett Aircraft Corporation, Dept. I, Upper Darby (Philadelphia), Pa.

KELLETT

OLDEST ROTARY WING AIRCRAFT MANUFACTURING COMPANY

CROWD MAGNET



Philadelphia Evening Bulletin Photo

Men and women stop to marvel at a helicopter. There is something miraculous about a machine that hangs or moves in the sky without wings or propeller. And flies forward, sideways or backward—hovers in one spot—rises or descends vertically, linking air travel with the ground, to make flying an easy step to anywhere.

The helicopter's high crowd appeal was shown (above) a few months ago in a demonstration of the Kellett XR-8 military model at Fairmount Park, Philadelphia, under sponsorship of the U. S. Army Air Forces.

With the ease of a hummingbird, the XR-8 flew in, high over the crowd, and settled to rest in a space only 100 feet square. Then the helicopter soared straight up, backed, swung from side to side like a pendulum, whirled, hovered. Finally it sped forward, at a faster clip than a motor car let loose on an express highway, in complete mastery of speed, height and direction.

Just what the public's keen interest in helicopters will mean in future industrial and commercial uses for this unique type of machine is more than we at Kellett Aircraft can forecast. As the oldest American designers and producers of rotary-winged craft, we consider one of the helicopter's most valuable features something we did *not* design or make—its inherent "crowd appeal," even to a nation which accepts modern streamlined trains and 400 mile-an-hour airplanes without a second glance.

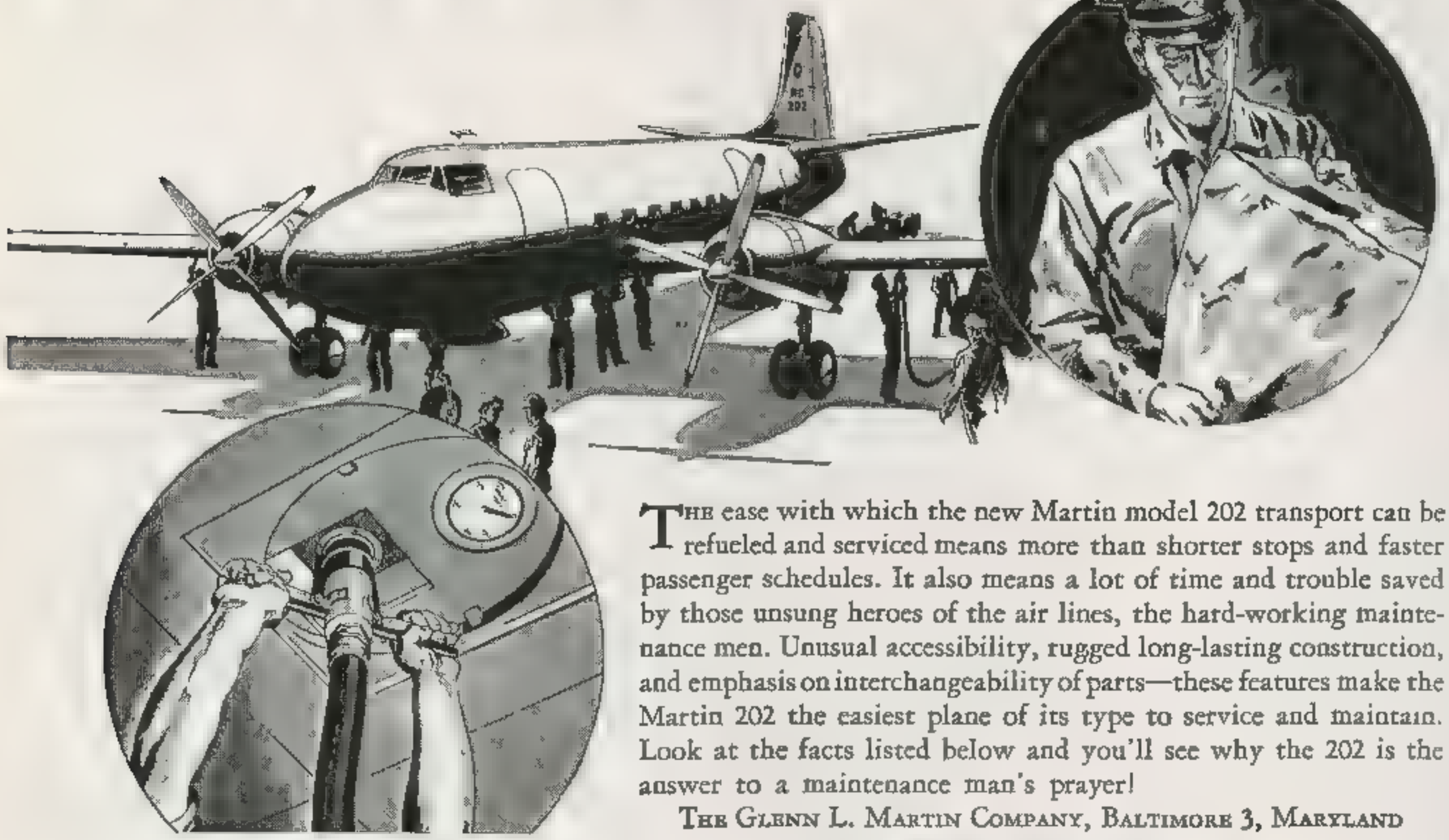
Operating details, including cost and payload, may postpone the widest practical application of the helicopter. However, specialized money-making applications seem close at hand. Kellett Aircraft and other important organizations in the helicopter field are devoting time, money and experience to hasten the day when these craft will meet the expectations of their most loyal boosters — the American public. Kellett Aircraft Corporation, Upper Darby, Pa.

KELLETT HELICOPTERS

WHAT THE NEW

Martin 2-0-2

MEANS TO AIRLINE MAINTENANCE MEN



Mareng Fuel Cells: Featured in the new Martin 202 are elastic fuel cells. These Mareng cells, like the bladder of a football, are easily installed or removed . . . may be quickly repaired.

Quick Refueling: To reduce waiting time at airports, the new Martin 202 is designed for under-wing pressure fueling . . . for oil tank servicing from the ground. No climbing on slippery wings in rain or snow.

THE ease with which the new Martin model 202 transport can be refueled and serviced means more than shorter stops and faster passenger schedules. It also means a lot of time and trouble saved by those unsung heroes of the air lines, the hard-working maintenance men. Unusual accessibility, rugged long-lasting construction, and emphasis on interchangeability of parts—these features make the Martin 202 the easiest plane of its type to service and maintain. Look at the facts listed below and you'll see why the 202 is the answer to a maintenance man's prayer!

THE GLENN L. MARTIN COMPANY, BALTIMORE 3, MARYLAND

Martin AIRCRAFT

Builders of Dependable Aircraft Since 1909

FACTS FOR MAINTENANCE MEN ABOUT THE NEW MARTIN 202!

• Radio, heating and electrical equipment, as well as control cables and hydraulic lines, all are located in the belly of the fuselage—are accessible through large "bomb-bay" type doors. Equipment is grouped to permit work on separate types with minimum of interference.

• Accessories at rear of engines are accessible from wheel-well through removable panel on fire wall. The 202 also permits under wing pressure fueling—oil tank servicing from ground. Adequate, quick-opening panels permit inspection of vital controls.

• Pilot's and co-pilot's flight group instruments removable as unit through nose wheel-well from back of instrument panel. Three-point suspension tubular engine mount is designed for maximum accessibility to engine.

• Flexible Mareng fuel cells, easily removed, installed or repaired. Cabin furnishings easily removable without tools.

• Special attention given to making all parts interchangeable. Wherever possible right and left hand parts are identical. Thus, for example, soundproofing consists of identical interchangeable panels, easily removed or installed without tools.

• Power plant mountings are designed for rapid replacement, right and left engines are interchangeable, cowlings are easily removed. Flexible, long-lasting, fireproof tubing for all fuel lines forward of firewall are specified.

• Landing gear consists of dual main wheels which are safer, lighter to handle, easily replaced—and a new style nose wheel which eliminates the complexity of the dual-sealed-tube type. Convenient jack pads permit easy replacement of wheels and brakes—down-and-up lock arrangement is simplified, reliable.

• These are only a few of the outstanding features of the Martin 202. From stem to stern this plane was designed to meet airline maintenance requirements as determined by long study of airline custom and procedure.

• The Martin 202 is engineered specifically to meet Air Transport Association specifications. Not just designed *for* the airline but *by* the airline—custom-built by Martin—to the most exacting standards of the air traveler.

Where all the BIG MAJOR company releases go for reissue and continued BIG grosses.

We are now adding newly produced feature length product for national distribution and invite producers to come to us with their release problems.

A sixteen year record of unparalleled success by the Company specializing in this field with distribution offices in all key cities.

Astor PICTURES CORP.

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President

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General Mgr.

— ✶ —

16 MM Division

ASTOR operates the largest international business in the 16mm sound field in both features and shorts.

JACQUES KOPFSTEIN
Sales Mgr.

The Greatest Aviation Show in History . . .

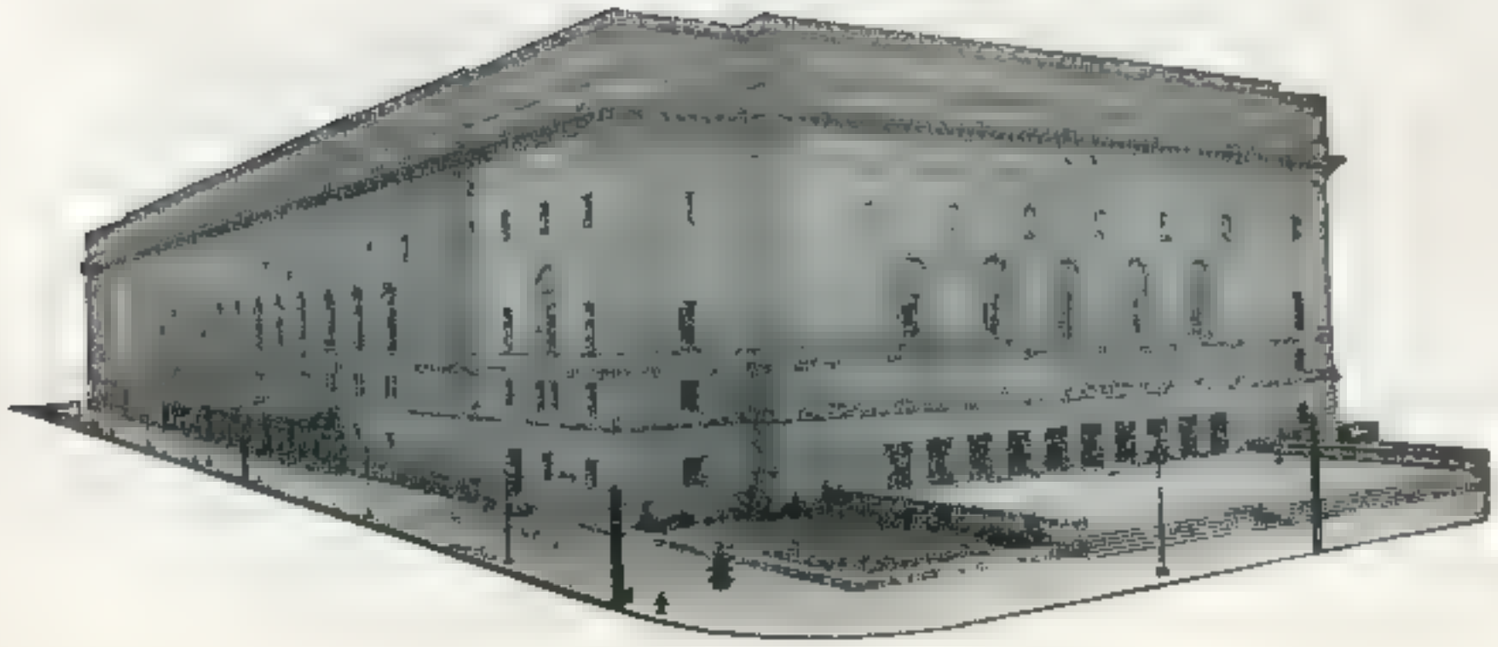
● Cleveland will be the aviation center of the world—January 11 through 20 — when the National Aircraft Show brings to Cleveland Public Auditorium outstanding personalties of the aviation industry. . . leaders of the Army Air Forces . . . aviation organizations and the largest number of Army planes and devices used in the War — along with the latest civilian planes of the present and coming air age ever shown in one exposition.

● More than 256,000 square feet of floor space is to be utilized for exhibits of Army Air Force aircraft used in all theaters of the war . . . top-secret instruments and devices that helped bring victory in the air . . . personal planes now being produced . . . and extensive exhibits of manufacturers who had a part in building our air force.

● This show is being sponsored by leading Cleveland and national aviation leaders . . . with proceeds going to the Army Air Forces Aid Society. It is approved by General H. H. Arnold and will have the complete cooperation of the Army Air Forces. For booth space, program or general information address all communications to:

NATIONAL AIRCRAFT SHOW

Room 300, Public Auditorium, CLEVELAND 15, OHIO



JAN. 11-20 Inclusive

FREIGHT PROGRESS

is the Result of the

EVERLASTING QUEST—

Test tubes and the odd-looking machines below—what do they have to do with the progressively greater freight handling capacity of modern railroads?

More than you would ever dream!

On the Norfolk and Western, the search for better materials, improved facilities, better operating methods and improved safety goes on day after day, year in and year out.

In the railway's modern, completely equipped physical and chemical laboratories, and in the field, N. & W. chemists, physicists, metallurgists and mechanical experts make approximately 30,000 scientific tests and analyses a year of the steel that goes into locomotives, cars, rails and bridges; concrete, ballast, paint, lubricating oils, signals, brakes, draft gears, coal—and thousands of other items.

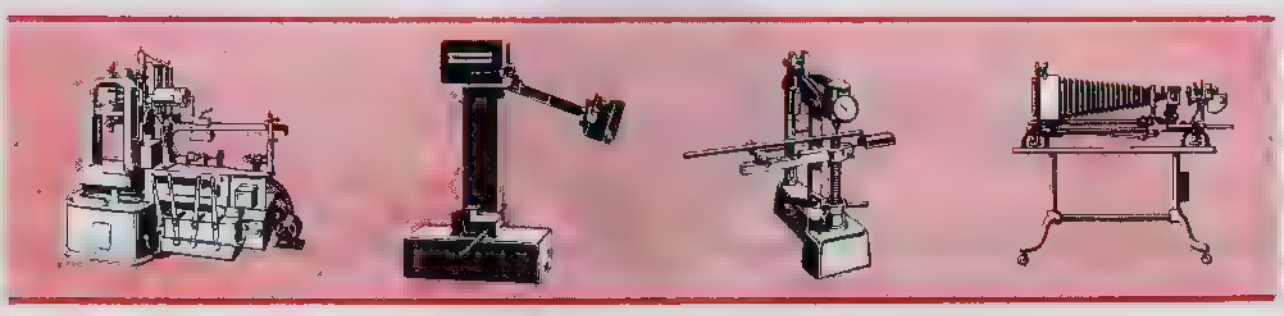
This "everlasting quest" adds up to continuous improvement in every phase of operations—a constant rise in the efficiency curve. That means freight progress. Here's proof:

With more modern, efficient steam locomotives, the Norfolk and Western moved 59 per cent more freight in 1944 than in 1918, and hauled it in better cars that made 62 per cent more mileage at 61.2 per cent faster freight train speed.

America's railroads are alert to their opportunities. By constant research, study, improvements and enterprise they will continue to forge ahead when Victory is won—as the safest, most efficient and progressive transportation system in the world.

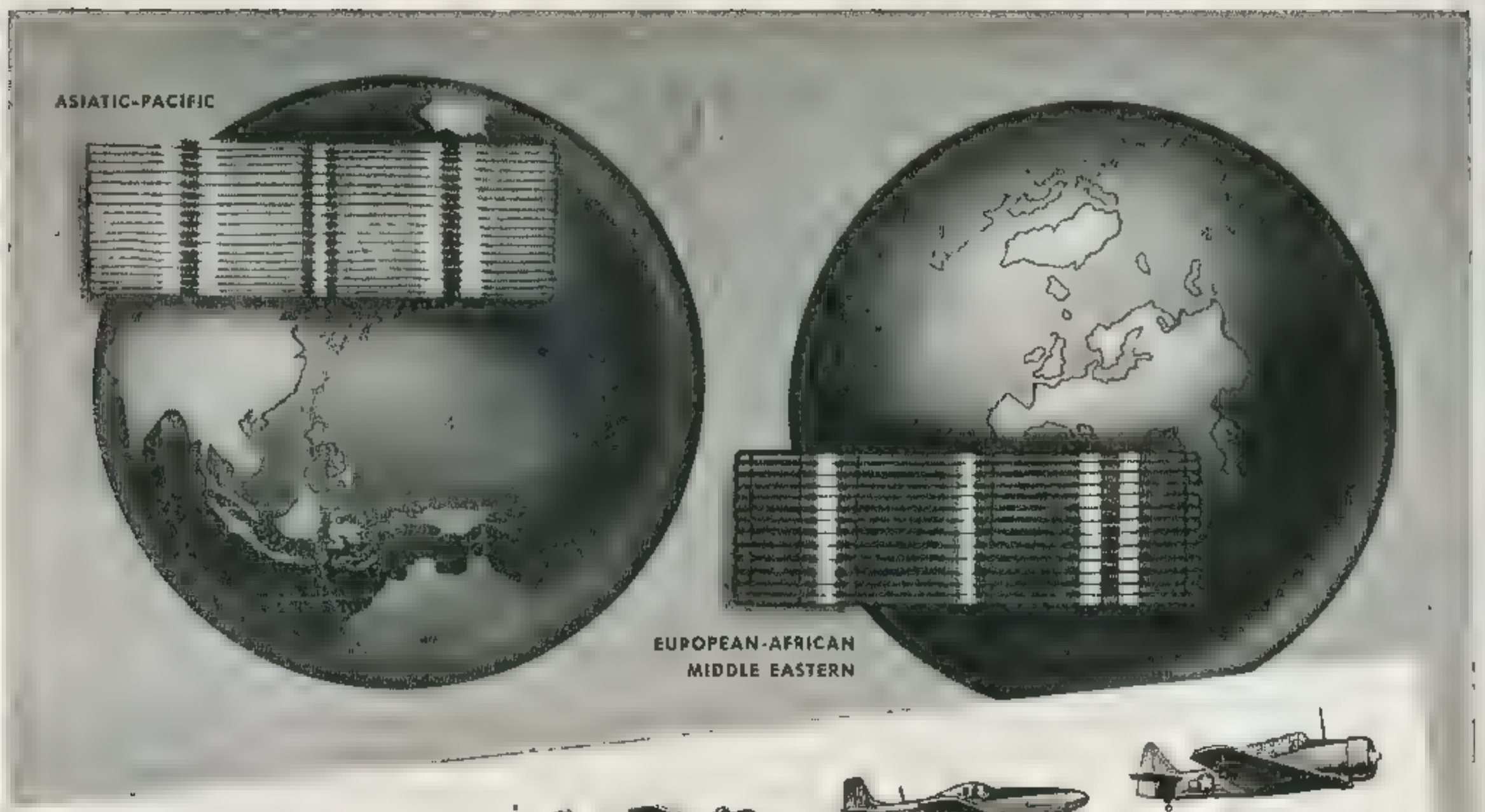
Norfolk and Western
RAILWAY

PRECISION TRANSPORTATION



NORTHWEST

THE ALL PURPOSE RAILROAD MACHINE
SHOVEL • CRANE • DRAGLINE • PULLSHOVEL



Combat Record of 3 Veterans

Above the left breast pocket of our fighting men you often see these service ribbons with battle stars upon them. By his ribbons you know where a man has been and the battles he has fought. If service ribbons were awarded to airplanes, these veteran North American Aviation planes would wear them from every theatre of operations. For wherever our air forces have been engaged, there, too, North American planes have helped heap destruction on the enemy.

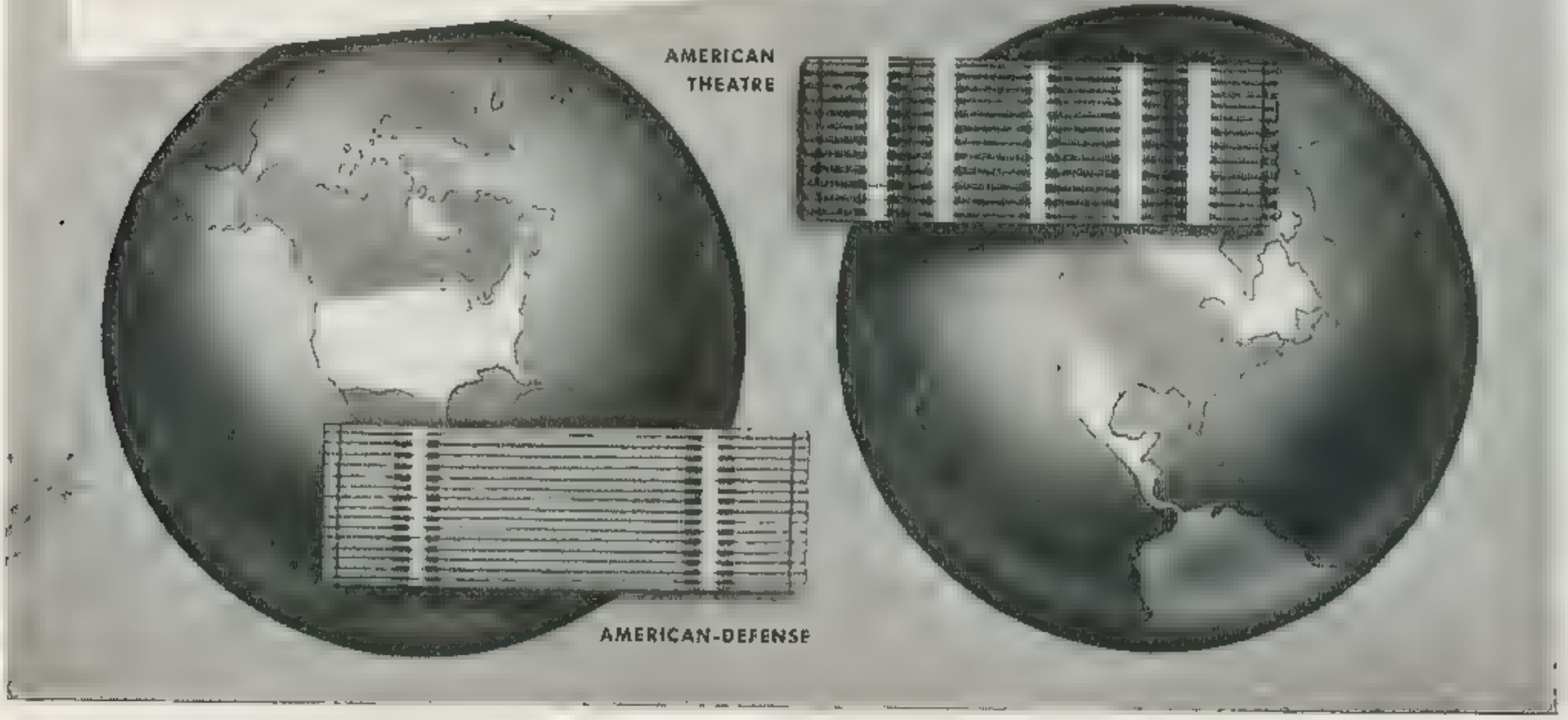
B-25 Mitchell Medium Bomber: The most heavily armed plane in the world. In addition to medium bombing, it has been used for strafing, attack bombing, weather missions, reconnaissance, as a freight carrier and night fighter. Our flyers call it the workhorse of the AAF.

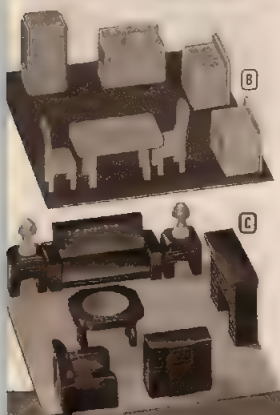
P-51 Mustang Fighter: Fastest propeller driven plane in the world: range, over 2000 miles; speed, over 450 M.P.H.; ceiling, above 8 miles. The Mustang has won the hearts of American pilots for it is known as a plane that not only gets 'em there but brings 'em back.

AT-6 Texan Combat Trainer: The world's most widely used plane. This North American advanced training plane has trained the pilots of 35 nations. AT-6 combat trainers are manufactured in Australia, Canada and Brazil under special licence of North American Aviation.

North American Aviation Sets the Pace

PLANES THAT MAKE HEADLINES...The P-51 Mustang fighter (A-36 fighter-bomber), the B-25 and PBJ Mitchell bomber, the AT-6 and SNJ Texan combat trainer, North American Aviation, Inc. General Offices, Inglewood, California. Member Aircraft War Production Council, Inc.





De Luxe Plywood Doll House

A MODERN, INTERLOCKING DOLL HOUSE. Made of the finest kiln-dried plywood, from surplus pieces of materials used in government housing. Smart and modern in design, this doll house is a preview of the home of tomorrow . . . low, flat roof; square, practical and harmonious architecture. Plywood is ¼ inch thick . . . of finest domestic type, specially treated to insure excellent wear. Plywood is kiln dried to remove all moisture, then sealed to prevent swelling.

Completely interlocking — takes only a few minutes to set up or take down — no screws, nails or tools of any kind needed. Interlocking structure makes the house sturdy and rigid . . . strong enough to support a child's weight. When taken apart and laid flat it can be stored in a space only 1 inch high

Ten large front windows and door covered with heavy, hard-to-break cellophane . . . makes the inside light and airy. Back of house is entirely open so child may conveniently play with furniture. Living Room 11 by 12 in., Combination Dining-Room and Kitchenette 11 by 11 in.; Combination Bathroom and Bedroom 11 by 8 in. Size overall: 34 in. long, 15½ in. wide, 11 in. high. Smart White and Blue finish. Furniture not included. Order separately below. *Mail-able.*

48 T 4505M Doll House only. Ship. wt. 10 lbs. $5.95

CHARMING DOLL HOUSE FURNITURE . . . ALL WOOD, HANDMADE

B 7-PIECE KITCHEN SET. White enamel finished wood. Cabinet, sink, stove, 2 chairs, refrigerator, table (3 in. long) Others in proportion.

48 T 4516—Shipping weight 12 ounces 94c

C 9-PIECE LIVING ROOM SET. Walnut finish. Chair, radio, fireplace, mirror top coffee table, 2 lamps, 2 tables, davenport (3¾ in. long.)

48 T 4513 Shipping weight 12 ounces. 94c

D 9-PIECE DINING ROOM SET. Walnut finish. 4 chairs, china closet with mirror, buffet, 2 lamps, table 3⅞ in. long. Others in proportion.

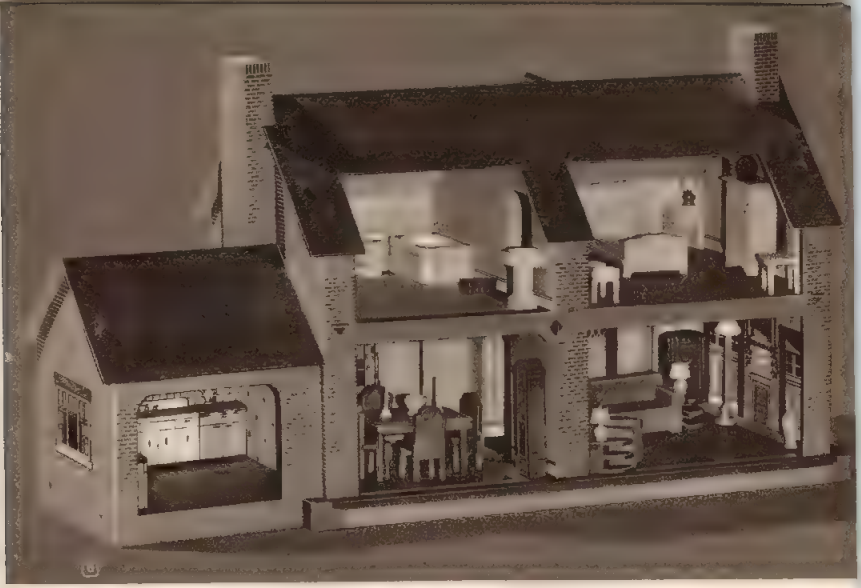
48 T 4514—Ship. wt. 12 oz. 94c

E 9-PIECE BEDROOM SET. Walnut finish. Dresser and dressing table with mirror, 2 night stands with lamps, highboy, bench, bed (3½ in. long).

48 T 4515—Ship. wt. 12 oz. . . 94c

F 7 PIECE BATHROOM SET. White enamel finish Washstand, toilet, scale, medicine cabinet, dresser with mirror, hamper, bathtub (3⅜ in. long)

48 T 4517—Ship. wt. 12 oz. . . . 94c



Completely Furnished Doll House

(G) 5-ROOM FIREBOARD DOLL HOUSE WITH 29 PIECES WOOD FURNITURE. You'll love making a home for your doll family. Wards Interior Decorators planned the inside of this lovely English-type House to look like a real home. Wallpaper, draperies, venetian blinds, rugs printed on the floors and walls lend realism seldom found in Doll Houses at this price. Big printed-on fireplace in the living room. Kitchen is completely "built-in." Stove, sink, cabinets and cupboards are of heavy fiberboard, realistically printed. First floor printed Red brick, upper floor printed timber and stucco. Entrance looks like field stone Green roof, Red chimneys. Back of house is open so you can move furnishings. Size overall: 27 in. long, 12½ in. wide, 15 in. high to top of chimney. Includes 29 pieces of well-made brightly-painted wood furniture. Enough to equip every room but the kitchen. LIVING ROOM: Sofa and Chair "upholstered" to look like real material Radio, 2 End Tables, "Grandfather" Clock, Floor Lamp, 2 Table Lamps, Vase DINING ROOM: Table, 4 Chairs, 2 Candlesticks, Bowl BEDROOM Bed, Chair, Highboy, Bench, Night Stand, Table Lamp, Clock. BATHROOM: Tub, Washstand, Toilet, Bath Scale Ship. wt. 5 lbs.
48 T 4493 -Doll House, 29 Pcs. Wood Furniture -$2.55

DOLL HOUSE WITH 96 PIECES CARDBOARD FURNITURE AND ACCESSORIES (not shown) Same house as above except no built-in cardboard cupboards. Completely equipped with cardboard furniture and accessories for Living Room, Dining Room, Bedroom, Bathroom and Kitchen. Ship. wt. 4 lbs.
48 T 4506—Doll House, 96 Pcs. Cardboard Furniture..... $1.77

DOLL HOUSE ACCESSORIES. (H through N) Clever miniatures, mostly handmade . . . doll house size.

(H) 48 T 4498—PANTRY "FOODS." Tiny wood, cardboard groceries; flour, ketchup, etc. Ship. wt. 6 oz. . . . 69c

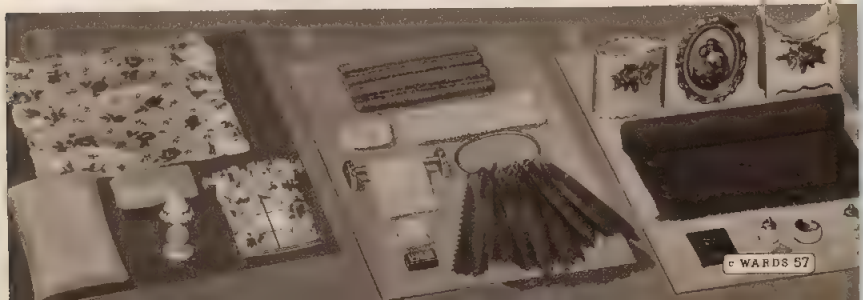
(J) 48 T 4497—TURKEY DINNER. Turkey, Cherry Pie, Cake, peas, tiny rolls, menu, etc. Ship. wt. 7 oz. . 89c

(K) 48 T 4485—BEDROOM ACCESSORIES. Bedspread, matching curtains, mattress, pillow, curtain pole, table lamp, cardboard window. Ship. wt. 5 oz. 89c

(L) 48 T 4499—KITCHEN ACCESSORIES. Tiny floor mop, hand mop, wood clock; flour, salt, sugar canisters and cookie jar. Ship. wt. 4 oz. 69c

(M) 48 T 4494—LIVING ROOM ACCESSORIES. Little picture, tiny "make-believe" Bible, two miniature jars and bowl, waste basket, magazine rack, living room rug, 7¾ by 5¼ in. Ship. wt. 7 oz. $1.35

(N) 48 T 4496 -BATHROOM ACCESSORIES. Towel, wash cloth; bath mat; hand towel; rack, shower curtain, toilet tissue, bar of "soap." Ship. wt. 5 oz. 69c



Gifts that thrill young cowboys

Our best double Holster Set

There'll be endless delight and excitement on Christmas morning when your youngster finds this stunning Lone Ranger set under the tree. He'll be envied by all his playmates with this colorful cowboy regalia. It's our finest, richly trimmed. Two heavy studded 9¾-inch holsters have decorated split cowhide fronts; artificial leather backs. The belt is something to behold: made of split cowhide with beautifully decorated, wide plastic waist band. Two 7¼-inch composition pistols, a lariat about six feet long and colorful cotton bandanna with imitation jewel clasp complete the set.

$2.98

49 N 5603—Shipping weight, 2 lbs. 4 oz. **$2.98**

Lone Ranger Set with double Holster

Just the thing to stimulate a lad's masculine instinct for daring exploits—the right equipment for rootin'-tootin' cowboy games. He'll be proud as a peacock when he's dressed up in style, looking like a red-blooded miniature Lone Ranger. This beautiful well-made set includes two holsters with sheepskin front, artificial leather back; two 7¼-inch composition pistols, adjustable split cowhide belt with two dummy bullets, lariat about six feet long.

$1.98

49 N 5607—Shipping weight, 2 pounds.. **$1.98**

Low-priced Lone Ranger Holster Set

Consists of one 7-inch composition gun; artificial leather holster with imprinted Lone Ranger insignia, web belt (dummy bullets not included); two sturdy fibre cuffs; and lariat about 6 feet long. Will please your youngster

$1.15

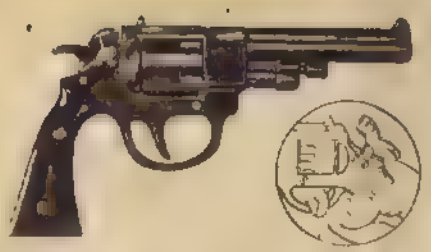
49 N 5626—Shipping weight, 1 lb. 6 oz.. **$1.15**

Pistol of smooth Plastic

Every two-fisted "hombre" needs a pistol for exciting play. Colt type automatic pistol with whistle has clicking trigger (does not shoot). Molded of smooth, hard-to-break plastic in assorted colors. 6 in. long, 4 in. high

52c

49 N 5604—Shipping weight, 8 ounces ...52c

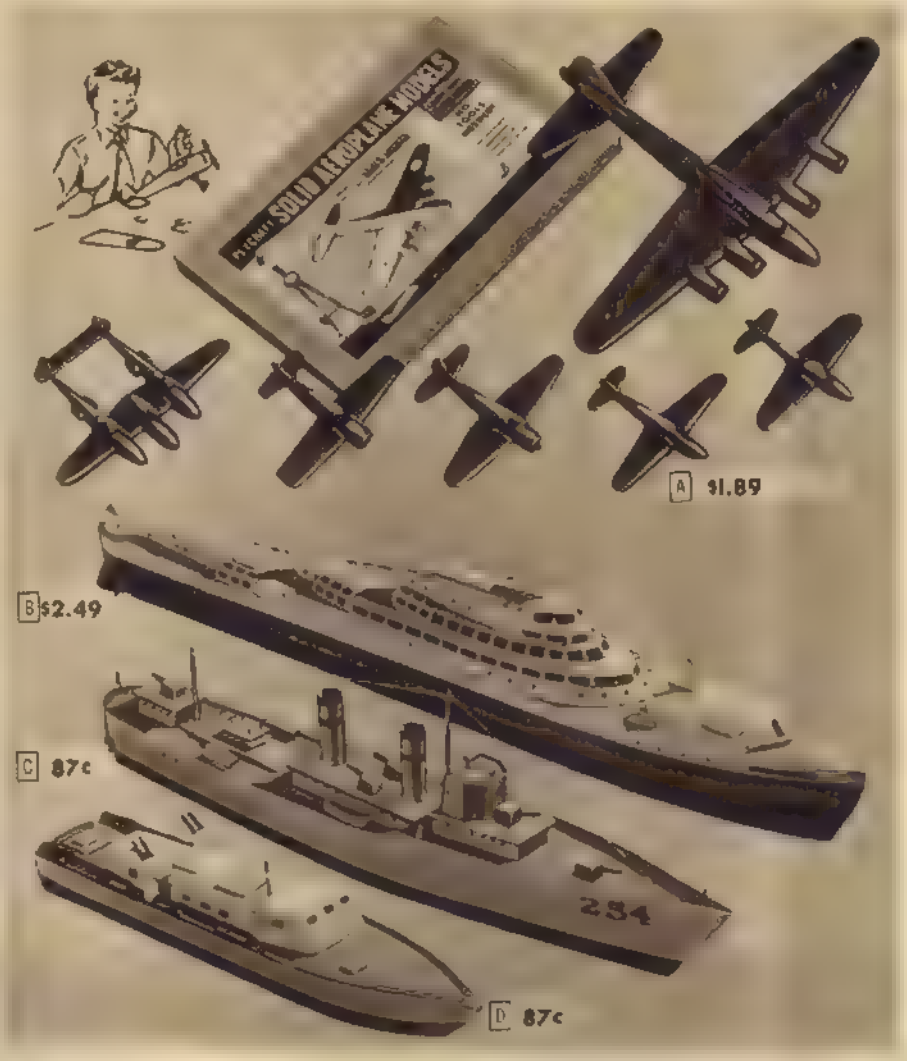


Larger Deluxe Plastic Pistol

Beautiful, realistic model of a revolver molded with intricate detail. Made of smooth, hard-to-break plastic in assorted colors. Has no rough edges. Trigger clicks (does not shoot) Size 8¾ in. long, 4 in. high.

$1.59

49 N 5605—Shipping weight, 8 ounces **$1.59**



Youngsters enjoy building these authentic Models

A 8 easy-to-build Army and Navy planes. No tools are needed for building these fine "Plycraft" models. Set includes B-17 bomber with 17½-inch wingspread; seven smaller planes, two P-40's; one P-39; two F4F4's; one P-38; one SBD-3. Glue, sandpaper, filling compound, paint and easy-to-follow instructions included

49 N 4738—Shipping wt., 3 lbs. 10 oz. **$1.89**

B Ocean Queen Kit. Here is an interesting, new model, extra large. You'll be proud when you have built this majestic passenger boat with its sleek, graceful lines. 24 inches long with 3½-inch beam. Sand, trim, and paint ready cut wood parts as instructed. Complete plans and materials, except paint, incl.

49 N 4735—Shipping wt., 2 lbs. 8 oz. **$2.49**

C U. S. Destroyer Kit. Young model builders will be delighted with this fine kit. Accurate 20-inch long model has 3-inch beam. Detailed, authentic fittings; pre-cut wood parts. Sand, trim and paint as instructed. Complete plans and all materials, except paint, included.

49 N 4742—Shipping weight, 2 lbs. . **87c**

D PT-10 Motor Torpedo Boat Kit. Building this realistic 16-inch scaled model with 4-inch beam is loads of fun for navy-minded youngsters. Sand, trim and paint ready-cut shaped wood parts as instructed. Complete plans and materials, except paint, included.

49 N 4736—Shipping weight, 2 lbs .. **87c**

Pump-action Pop Gun

Thrill your youngster with this fine low-priced play gun designed especially to please young sharpshooters Cork on string pops as fast as grip is pumped, producing a loud noise. All wood construction. Heavy gray cotton web sling. **$1.39**

79 N 05623 –29 in. long. Shpg wt., 2 lbs. **$1.39**

Junior Trainerifle

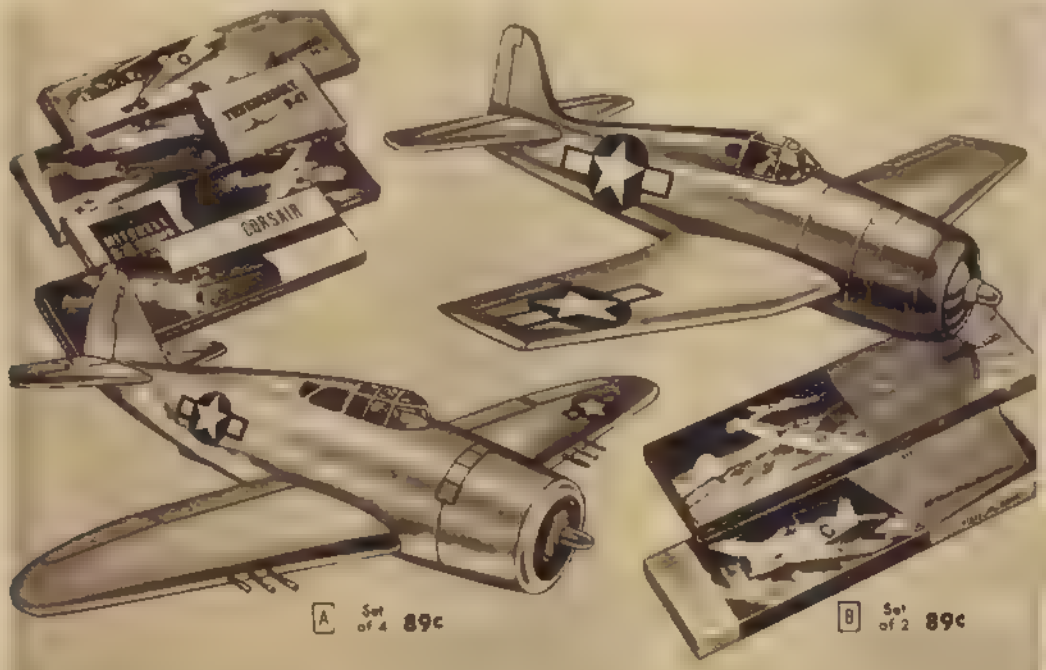
Here it is, boys . . . a gun made to look like the U. S. Army Springfield rifle. Has movable bolt action, automatic snap trigger (does not shoot) Made of close-grained wood. Adjustable khaki web sling. ¾-size of real gun **$1.67**

79 N 05628—35 in. long. Shpg. wt., 3 lbs. **$1.67**

Senior Trainerifle

Like a U. S. Army Springfield rifle—full size, 43⅜ in. Use it for real drilling. Bolt action; automatic snap trigger (does not shoot). Graduated rear sight, blade front sight. Walnut stained wood. Adjustable cotton web sling **$4.98**

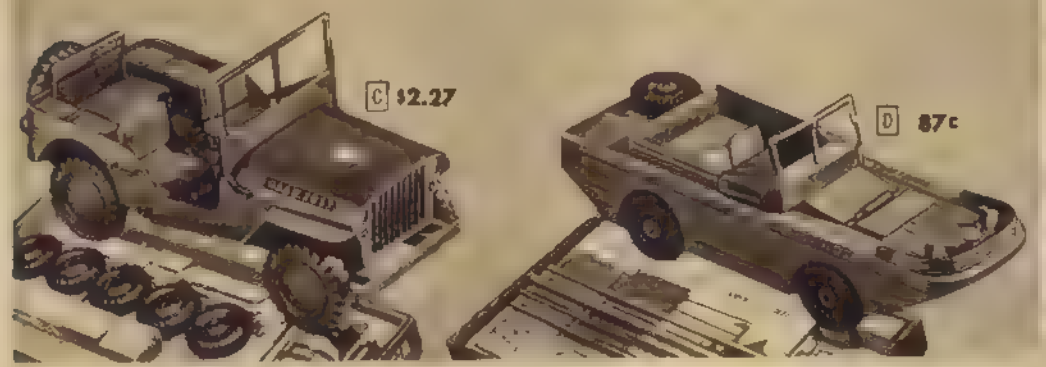
79 N 05629—Shipping weight, 5 pounds. . . . **$4.98**



A Set of 4 **89c**

B Set of 2 **89c**

E **$1.00**



C **$2.27**

D **87c**

F **$1.00**

Scale models of planes and jeeps with plans for assembling

A Set of 4 Model Kits. Solid all-Balsa wood models. Set contains Capt. E. Hamilton Lee's flight lesson, "Take-off." Includes "Mitchell" B-25 bomber, 10-in. wingspan; Vought-Sikorsky P-4-U-1 "Corsair," 28-in wingspan with retractable landing gear, P-47 "Thunderbolt," 11-in. wingspan with retractable landing gear; TG-5 "Aeronca" glider, 32-in. wingspan

49 N 4767—Shpg. wt., 1 lb. 8 oz. . . . . Set of 4 **89c**

B Two Hollow-Scale Models. Breathtaking replicas for more advanced model builders: Grumman Hellcat Navy fighter (15-in. wingspread), famed for its terrific speed; Schweizer TG2 Towline Glider (36-in wingspread), used as sport glider in pre-war days. All-Balsa wood kits with all materials needed; each with Capt. E. Hamilton Lee's flight lesson, "Take-off."

49 N 4768—Shipping weight, 1 pound . Set of 2 **89c**

C Detailed Scale-Model Jeep. This tough little car is the pride of the Army, renowned for its dependability. Build this 1⅞-inch realistic model. No carving—kit contains pre-formed wood parts; fiberboard parts die-cut and scored; 5 molded composition full-tread wheels, insignia decals, olive-drab paint, and cement.

49 N 4760—Shipping weight, 2 pounds. **$2.27**

D Amphibian Jeep Kit. You'll enjoy constructing this sea-going jeep . . . model of the combination boat and jeep that operates on both land and water. No carving necessary—all wood parts are ready-cut; fiberboard parts are die-cut and scored. Fiberboard wheels roll. Sandpaper included. 13⅜ inches long

49 N 4734—Shipping weight, 1 lb. 8 oz. **87c**

Amazing Trick Sets

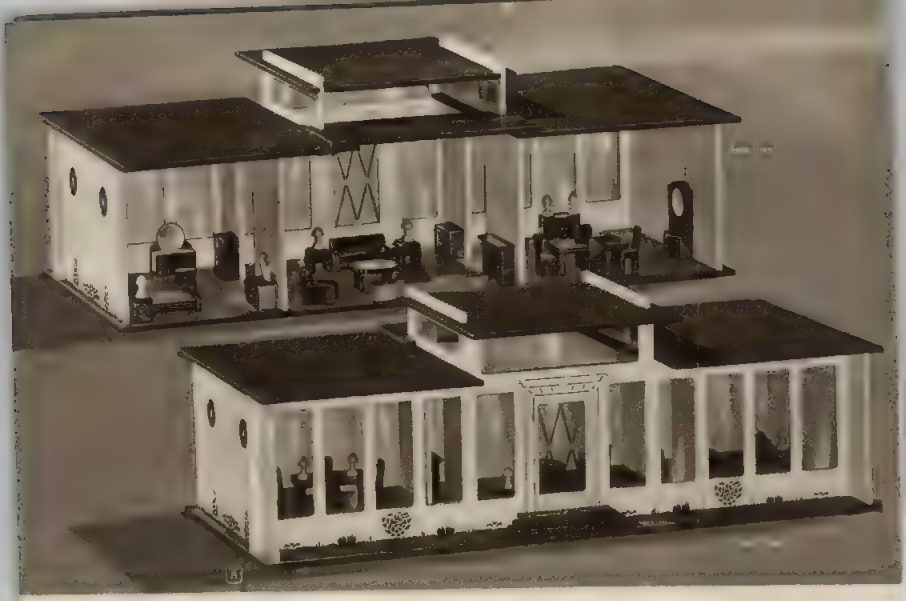
E 10-piece Joke Assortment. Hilarious fun-makers . . . practical jokes that make even the victim laugh, gasp and giggle. Outfit contains dummy matches, dribbling drinking glass, beer trick, invisible ink, magic powder, hot seat trick, wonder mouse—3 others.

49 N 4606—Shipping wt., 1 lb. . . **$1.00**

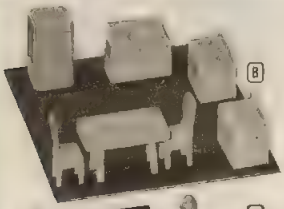
F Nine Parlor Tricks. Startle your friends . . . keep them mystified with these weird tricks: Hindoo Mystery, Ring Illusion, T-puzzle, Gravity Glass, Chan's laundry ticket, and 4 other famous tricks that are sure to prove puzzling

49 N 4609—Shipping wt., 1 lb. **$1.00**

Toy rifles, holster sets, model kits, and trick outfits . . can be bought on Sears Easy Terms. See page 182C



De Luxe Plywood Doll House



A MODERN, INTERLOCKING DOLL HOUSE. Made of the finest kiln-dried plywood, from surplus pieces of materials used in government housing. Smart and modern in design, this doll house is a preview of the home of tomorrow . . . low, flat roof; square, practical and harmonious architecture. Plywood is ¼ inch thick . . . of finest domestic type, specially treated to insure excellent wear. Plywood is kiln dried to remove all moisture, then sealed to prevent swelling.

Completely interlocking — takes only a few minutes to set up or take down — no screws, nails or tools of any kind needed. Interlocking structure makes the house sturdy and rigid . . . strong enough to support a child's weight. When taken apart and laid flat it can be stored in a space only 1 inch high.

Ten large front windows and door covered with heavy, hard-to-break cellophane . . . makes the inside light and airy. Back of house is entirely open so child may conveniently play with furniture. Living Room 11 by 12 in.; Combination Dining-Room and Kitchenette 11 by 11 in.; Combination Bathroom and Bedroom 11 by 8 in. Size overall 34 in. long, 15½ in. wide, 11 in. high. Smart White and Blue finish. Furniture not included. Order separately below. *Mail Orders.*

48 T 4505M – Doll House only. Ship. wt. 10 lbs. $5.95

CHARMING DOLL HOUSE FURNITURE . . . ALL WOOD, HANDMADE

B 7-PIECE KITCHEN SET. White enamel finished wood. Cabinet, sink, stove, 2 chairs, refrigerator, table (3 in. long). Others in proportion.

48 T 4516—Shipping weight 12 ounces 94c

C 9-PIECE LIVING ROOM SET. Walnut finish. Chair, radio, fireplace, mirror top coffee table, 2 lamps, 2 tables, davenport (3¾ in. long.)

48 T 4513—Shipping weight 12 ounces 94c

D 9-PIECE DINING ROOM SET. Walnut finish. 4 chairs, china closet with mirror, buffet, 2 lamps, table 3⅞ in. long. Others in proportion.

48 T 4514—Ship. wt. 12 oz. 94c

E 9 PIECE BEDROOM SET. Walnut finish. Dresser and dressing table with mirror, 2 night stands with lamps, highboy, bench, bed (3⅛ in. long).

48 T 4515—Ship. wt. 12 oz. . . 94c

F 7 PIECE BATHROOM SET. White enamel finish. Washstand, toilet, scale, medicine cabinet, dresser with mirror, hamper, bathtub (3⅜ in. long.)

48 T 4517—Ship. wt. 12 oz. . . . 94c

Completely Furnished Doll House

G 5-ROOM FIBERBOARD DOLL HOUSE WITH 28 PIECES WOOD FURNITURE. You'll love making a home for your doll family. Wards Interior Decorators planned the inside of this lovely English-type House to look like a real home. Wallpaper, draperies, venetian blinds, rugs printed on the floors and walls lend realism seldom found in Doll Houses at this price. Big printed-on fireplace in the living room. Kitchen is completely "built-in." Stove, sink, cabinets and cupboards are of heavy fiberboard, realistically printed. First floor printed Red brick, upper floor printed timber and stucco. Entrance looks like field stone. Green roof, Red chimneys. Back of house is open so you can move furnishings. Size overall, 27 in. long, 12½ in. wide, 15 in. high to top of chimney. Includes 28 pieces of well-made brightly-painted wood furniture. Enough to equip every room but the kitchen. LIVING ROOM: Sofa and Chair "upholstered" to look like real material. Radio, 2 End Tables, "Grandfather" Clock, Floor Lamp, 2 Table Lamps, Vase. DINING ROOM: Table, 4 Chairs, 2 Candlesticks, Bowl. BEDROOM: Bed, Chair, Highboy, Bench, Night Stand, Table Lamp, Clock. BATHROOM: Tub, Washstand, Toilet, Bath Scale. Ship. wt. 5 lbs.
48 T 4493—Doll House, 28 Pcs. Wood Furniture . $2.63

DOLL HOUSE WITH 96 PIECES CARDBOARD FURNITURE AND ACCESSORIES (not shown). Same house as above except no built-in cardboard cupboards. Completely equipped with cardboard furniture and accessories for Living Room, Dining Room, Bedroom, Bathroom and Kitchen. Ship. wt. 4 lbs.
48 T 4506—Doll House, 96 Pcs. Cardboard Furniture $1.78

DOLL HOUSE ACCESSORIES. (H through N). Clever miniatures, mostly handmade . . . doll house size.

H 48 T 4498—PASTRY "FOODS." Tiny wood, cardboard groceries: flour, ketchup, etc. Ship. wt. 6 oz. . . . 69c

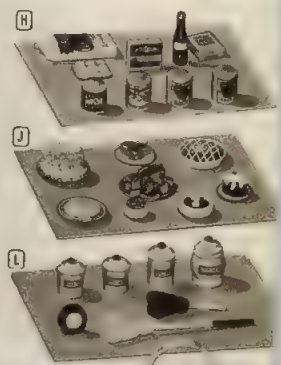
J 48 T 4497 TURKEY DINNER. Turkey, Cherry Pie, Cake, peas, tiny rolls, menu, etc. Ship. wt. 7 oz 89c

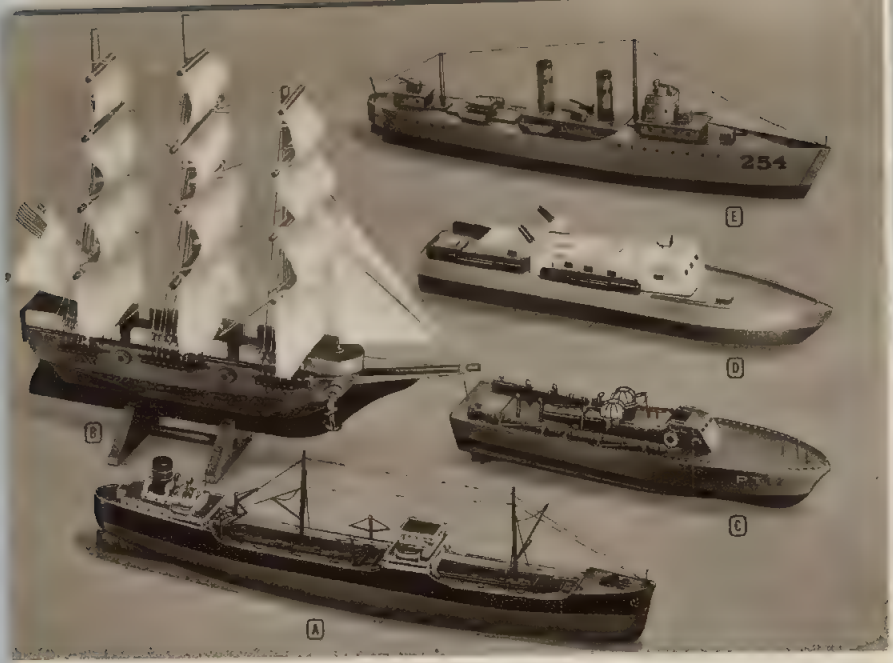
K 48 T 4495—BEDROOM ACCESSORIES. Bedspread, matching curtains, mattress, pillow, curtain pole, table lamp, cardboard window. Ship. wt. 5 oz. . 89c

L 48 T 4499—KITCHEN ACCESSORIES. Tiny floor mop, hand mop, wood clock; flour, salt, sugar canisters and cookie jar. Ship. wt. 4 oz. 69c

M 48 T 4494—LIVING ROOM ACCESSORIES. Little picture, tiny "make-believe" Bible, two miniature jars and bowl, waste basket, magazine rack, living room rug, 7¾ by 5¼ in. Ship. wt. 7 oz. $1.35

N 48 T 4496—BATHROOM ACCESSORIES. Towel, wash cloth, bath mats, hand towel, rack, shower curtain, toilet tissue, bar of "soap." Ship. wt. 5 oz. 89c





Ships to build... Tanker, PT Boats, Destroyer

Build detailed models of boats, jeeps, etc with these easy-to-make kits . . . a fascinating hobby for adults and children. Authentic replicas of boats in the news today. All equipment, materials and full plans for making scale models are included. For paints, see Page 78.

A Model Oil Tanker. Build a realistic 18-inch replica of an oil tanker with this kit. Molded hull is ready for sanding, finishing and painting. Detailed authentic fittings . . . ventilators, pipe lines, etc. Balsa wood for pilot house, after-deck and similar parts. Sand, trim and paint to make finished model. Plans, materials except paint included. See Page 78 for paint.
48 T 2532—Ship. wt. 1 lb. 4 oz. $1.43

B Clipper Ship with Stand. Wood parts ready-cut and colored. Simple to assemble and rig. Instructions.
48 T 2524—16 in. long. Ship. wt. 2 lbs. 4 oz. 77c

C Mosquito Boat, PT-17 Kit makes accurately scaled 12½-in. model. Plenty of interesting handwork to do. Solid balsa wood hull—roughly shaped, to be trimmed, sanded and finished. Printed deck and detailed parts. Wood dowels and strips for making guns, etc. Metal ventilators, pre-cut propellers give professional look to finished model. Complete plans for assembling, materials except paint, see Page 78.
48 T 2533—Ship. wt. 1 lb. 4 oz . . . $2.39

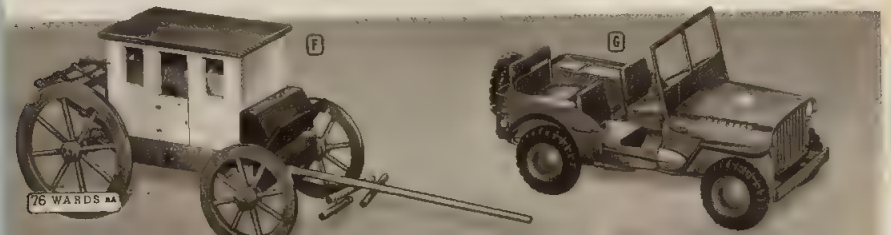
D PT10 Torpedo Boat. No experience needed to make a fine looking model 16 in. long. Hollow wood hull. All wood parts, torpedo tubes, etc., are turned, ready for sanding. Plans, materials except paint included.
48 T 2527—Ship. wt. 1 lb. 8 oz. 83c

E Destroyer. Build a realistic 18-inch model easily with this kit. No experience is necessary to make a really neat job. All wood parts turned, ready for sanding and assembling. Decks, structures printed. Complete plans and materials except paint included.
48 T 2528—Ship. wt. 1 lb. 8 oz. 83c

KITS TO BUILD...STAGECOACH, ACCURATE SCALE MODEL JEEP

F Stagecoach Kit. It's easy to build a model stagecoach for your mantel or collection with this simplified kit. Wood parts are ready-cut and colored. Kit makes 18-inch long model; complete instructions and materials for building attractive stagecoach included. No paint needed.
48 T 2523—Shipping weight 2 lbs. 4 oz. 85c

G Super Jeep Kit. Builds accurate 11-inch scale model of famous U.S. Army jeep. Has X-type frame, muffler and laminated springs like a real jeep . . . hinged windshield, molded plastic wheels. Wood parts pre-shaped, balance die-cut or scored. Materials, paint, plans included.
48 T 2537—Shipping weight 2 lbs. 6 oz. $2.27



Warship Kits...Ocean Liner of the Future

H OCEAN QUEEN. Build a model of the newest in post-war trans-oceanic liners. Sleek and streamlined, the model is detailed and accurately scaled. Hollow wood hull. All wood parts cut to shape, need only trimming and sanding. Kit includes all necessary materials except paint. See Page 78. Large step-by-step plans and instructions for making a 24-inch long model.
48 T 2529—Shipping weight 2 lbs. 4 oz. $2.39

J BATTLESHIP "NORTH CAROLINA." An easily built 18-inch model of a powerful warship. Ready-molded wood-pulp hull needs only sanding and painting. Printed deck plan and balsa wood parts. Revolving turrets, anti-aircraft guns, catapults, life boats, etc. Complete detailed plans and all materials for making model included except paint. See Page 78.
48 T 2531—Shipping weight 1 lb. 4 oz. $1.37

K COAST GUARD CUTTER "CAMPBELL." Build a 21¼-inch accurately scaled model. Detailed down to tiny metal anchors and chains, range finder, gangways, search lights, realistic portholes, etc. Lots of interesting hand-work to do . . . carved solid wood hull needs sanding, trimming, painting. Detailed plans, materials except paint are included. See Page 78.
48 T 2535—Shipping weight 2 lbs. $3.29

L AIRCRAFT CARRIER "WASP." Even beginners can make this 18-inch model of the "Wasp" because of the minimum of superstructure and deck detail. Much of the detail is ready-molded into the wood-pulp hull—simply sand, trim and paint. Has flight deck, navigation bridge, life boats, guns, propellers. Plans, all materials except paint—see Page 78.
48 T 2530—Shipping weight 1 lb. 4 oz. $1.37

WARDS TIME PAYMENT PLAN OFFERS A CONVENIENT WAY TO BUY YOUR CHRISTMAS GIFTS. SEE PAGE 19 FOR TERMS.

JEEPS TO BUILD...AUTHENTIC LAND AND AMPHIBIAN MODELS

M JEEP KIT. Builds an authentic model of the all-purpose U. S. Army Jeep . . . less detailed than the one shown at left on opposite page. Fiberboard wheels. No carving, all wood parts pre-shaped; cardboard parts die-cut and scored. All materials except paint—see Page 78. Instructions.
48 T 2525 8¾ in. long. Ship. wt. 1 lb. 83c

N AMPHIBIAN JEEP KIT. Builds realistic model of combination boat and jeep that operates on land and water. Fiberboard wheels. No carving; wood parts are pre-shaped; fiberboard parts die-cut and scored. All materials except paint included—see Page 78. Complete instructions.
48 T 2526—12 in. long. Ship. wt. 1 lb. 4 oz. 83c

PAINT AND CEMENT FOR MODELS

(H) DOPE AND CEMENT OUTFIT contains 8 tubes of cement, 6 bottles of dope (Red, White, Green, Olive Drab, Blue and Orange). Cement is crystal clear, dries quickly, holds parts securely.

Dope can be used on tissue covered models, or on solid wood models, and on metal toys, cans, etc. Easily applied, quick drying, gives durable waterproof finish. Both paint and cement have many household uses, rejuvenate old toys.

48 T 2557 Ship. wt. 2 lbs 89c

Cleveland and Joe Ott Kits

CLEVELAND KITS (A,B,C). Build detailed, accurate scale models of famous planes. Employ real plane construction methods. Wing ribs, fuselage formers printed on balsa wood; long straight basswood stripe. All materials, paint, dope, cement and detailed instructions included. Planes fly when powered by rubber band (not included).

JOE OTT KITS (D,E,F,G). Good models for even a beginner to make. Ott-O-Former construction system has hard-to-make parts already printed and die cut. Full scale plans, directions, materials.

(A) NORTH AMERICAN MUSTANG P-51. Pursuit plane. Kit makes 27 1/16-inch wingspan model.
48 T 2583—Ship. wt. 3 lbs. 6 oz. $2.69

(B) CONDOR 7-FT. GLIDER. Wing area 324 sq. in. Launch by hand or tow line. No paints.
48 T 2592—Ship. wt. 1 lb. 6 oz. 89c

(C) LOCKHEED LIGHTNING P-38. U.S. fighter plane. Kit makes 38 3/4-inch wingspan model.
48 T 2594 Ship. wt. 4 lbs. $3.59

(D) HELLDIVER SB2C1. Speedy U. S. Navy dive bomber. Makes 32-in. wingspan flying model.
48 T 2590 Ship. wt. 14 oz. 87c

(E) NORTH AMERICAN MITCHELL BOMBER B-25. Kit makes 40-inch wingspan flying model.
48 T 2591—Ship. wt. 1 lb. 8 oz. $1.69

(F) THUNDERBOLT P-47. Single seat fighter plane. Kit makes 27 inch wingspan flying model.
48 T 2588 -Ship. wt. 12 oz. 43c

(G) GRUMMAN HELLCAT. Carrier fighter plane. Kit makes 27-inch wingspan flying model.
48 T 2589—Ship. wt. 12 oz. 43c

TOY TELESCOPE, KALEIDOSCOPE AND MINIATURE ARMY SET

(J) KALEIDOSCOPE. Makes thousands of beautiful colored designs . . . just turn end piece to rearrange colored pieces . . . no two alike. Heavy cardboard with fancy paper cover.
48 T 2251—Ship. wt. 8 oz. 45c

(K) 3-SECTION TELESCOPE . . . extends to 19 in. Optical ground polished lenses, magnify to six times. Use for studying stars, birds, etc. Heavy cardboard with plastic end and eye-piece.
48 T 2250—Ship. wt. 1 lb 79c

(L) 14 PIECE MINIATURE ARMY SET. For young soldiers to use on "window-sill maneuvers," and pass many pleasant hours in imaginary "warfare." Includes tank, 2 jeeps, searchlight truck, anti-aircraft gun truck, plane, 2 artillery field pieces, each about 2 1/4 in. long, 2 flagpoles with flags . Nicely made of wood, painted olive drab. 4 cardboard tents.
48 T 1325 14-Piece Army Set. Shipping weight 1 lb. 95c

Bit o' Heaven

[illegible] Doll [illegible] Bit o' [illegible] [illegible] [illegible]

Sleepyhead Dolls, deluxe Teddies...other soft toys

[A] [illegible] Soft [illegible] for [illegible] and [illegible] Many [illegible] time [illegible] and Adorable [illegible] [illegible] Assorted colors. If [illegible] [illegible], whichever is available.
48T1454 Sft. wt. 4 oz. 98c

[B] [illegible] Fawn. Most [illegible] of [illegible] Soft [illegible] Sleepyhead [illegible] Nursery [illegible] Sleepyhead [illegible] [illegible] Sleepyhead [illegible] [illegible] Assorted colors, whichever is available.
48T1455 Sft. wt. 12 oz. 98c

[C] Whopper [illegible] Soft [illegible] [illegible] Soft [illegible] [illegible] Sleepyhead [illegible] [illegible] Sleepyhead [illegible] [illegible] Assorted colors.
48W4[illegible] Stuffed wt. [illegible] 17c

[D] [illegible] [illegible] [illegible

Sturdy washable Pets... Appealing Animals to cuddle

H WASHABLE LAMB. Frisky lambkin playmate for [illegible] washable, waterproofed rayon fabric [illegible] 48 x 14 in. [illegible] $5.95

J WASHABLE DOG. Chubby man's best friend, and flapping ears. Washable waterproofed rayon fabric [illegible] 46 x 16 in. [illegible] $1.95

K WASHABLE HORSE. Sturdy chestnut with ears [illegible] 46 W x 42 H [illegible] $5.95

I PONY PERFECT. Pretty Pony with [illegible] 48 [illegible] $5

M [illegible] HOUSE. A wing of hand-[illegible] 4 [illegible] $5.98

A PUPPY SCOTTIE. A [illegible] 4 [illegible] $4.95

Winsome Shaggies...Animals with fluffy coats

DE LUXE "SHAGGIES." Beautiful fluffy animals with cute perky expressions, in lifelike poses. They have thick shaggy coats of extra long cotton back rayon pile. Lining of ears, tail, underside of body in contrasting soft fleece. Firmly cotton stuffed. Cleverly designed and beautifully finished. They're charming playmates for children, and prized by collectors as bedroom decorations.

(A) SHAGGY ELEPHANT. Blue plush and pink fleece. Big shiny button eyes. Ribbon bow.
48 T 1404—Abt. 15 in. Tall. Ship. wt. 3 lbs. . $4.95

(B) SHAGGY KITTEN. Pink plush and blue fleece. Glass eyes, felt eyebrows, plastic nose. Whiskers, embroidered mouth, felt tongue. Bow.
48 T 1401 Abt. 15 in. Tall. Ship. wt. 3 lbs. $4.95

(C) SHAGGY DOG. Ivory plush and red fleece. Button eyes, plastic nose, felt tongue. Bow.
48 T 1402 Abt. 14 in. Tall. Ship. wt. 3 lbs. . $4.95

(D) SHAGGY BEAR. Brown plush and peach fleece. Rubber snout, shiny button eyes, plastic nose embroidered mouth, felt tongue. Bow.
48 T 1403 Abt. 15 in. Tall. Ship. wt. 3 lbs. . $4.95

MUSICAL BEAR PLAYS TINKLING TUNE...SOFT BABY LAMB

(E) MUSICAL SLEEPING BEAR. Deluxe quality. Soothing bedtime companion, a snuggly baby bear that plays tune. Swiss music box hidden inside with windup key. Luxurious pink and blue rayon plush, downy soft and light. Cotton filled; head shrunk inside. Legs fit gently into side poses. Stand. Bears jointed inside and furnish paws. Embroidered nose, mouth and closed eyes.
48 T 1453 About 8½ inches Tall. Shipping weight 2 lbs. $8.49

(F) BABY LAMB. Leggy lambkin of snowy white wool with springtime garland of wildflowers. Sweet and cuddly, it's suitable for even the smallest child. Long woolly legs, downy soft body in fleece. Soft plush head. Short chubby tail. Real rubber expressive, button eyes with shiny felt eyebrows, embroidered nose and mouth. Cleaning instructions included.
48 T 1511 About 14½ inches Tall. Shipping weight 2 lbs. $4.95

ALL WARDS 63

Effanbee's Adorable Baby Dolls

A **Effanbee "Sweetie Pie" Baby Doll** so lifelike, she's almost like a real baby. Flirting Glassene eyes (with real lashes) move from side to side. She sleeps and says "Ma-Ma." Curly "Tousle Tot" hair is real lambskin . . . won't mat or tangle, can be "shampooed" with damp cloth. Hair is firmly attached to head. (Read about Tousle Tot's hair—see "Effanbee Dolls" on Page 62.) Head, arms, legs are beautifully molded composition. Soft body is cotton stuffed. Head turns. Exquisitely made bonnet and dress of sheer Pink and White Rayon Marquisette with dainty lace frills and flowered embroidery. Dress buttons in back . . . sash ties in big bow. Lace trimmed slip and panties. White socks and shoes. In attractive cardboard gift box.

48 T 3931—24 inches tall. Shipping weight 5 lbs. 8 oz. .. $15.95

48 T 3932—19 inches tall. Shipping weight 3 lbs. 12 oz. .. 11.50

Effanbee Dolls are the finest quality dolls in the world. Read about them on Page 62. Use your credit and buy the best. See Page 19 for Wards convenient Time Payment Plan.

B **Effanbee Baby Doll and Layette in Traveling Case** (shown on facing page). A beautiful and charming gift that will delight the most fastidious little girl. She's so like a real baby, no little girl can resist wanting to cuddle her and dress her in her lovely baby clothes. She has flirting, sleeping Glassene eyes with real lashes, and you can "shampoo" her real lambskin hair with a damp cloth. Her hair is firmly attached. Turning, tilting head. Chubby arms and legs are movable. She's 19 inches tall, made entirely of composition, beautifully modeled. Sweet little "Tousle-Tot" comes to you in a ruffled sun suit. She brings with her an 11-piece layette: cotton flannel blanket; one-piece flannelette pajamas; cotton twill coat and bonnet; white batiste dress with braid trimming; lace-edged lawn slip; jersey knit shirt; cute white baby shoes and socks. Clothes fasten with real buttons, buttonholes. Suitcase of heavy cardboard on wood frame; handle and snap lock. Size of suitcase 23 by 15⅜ by 8½ in. Read about finest quality Effanbee dolls on Page 62.

48 T 3929M—19-inch Baby Doll and Layette in Traveling Case. Ship. wt. 11 lbs. . . . $21.00

C **Effanbee's Adorable New Babyette Doll in Basket** (shown on facing page). An exquisite gift—a lovely dream come true—for the little girl you love. A tiny, darling "baby" nestling in her pink basket . . . lined with blue and pink fluffy ruffles of sheer Rayon Marquisette and soft rayon, with big rosettes of rayon satin ribbon on each side. She sleeps on dainty ruffled organdy pillow. Babyette is realistically modeled from a four-day old sleeping baby. The life-like head is a masterpiece of modeling . . . tiny tilted nose, lei little cheeks, receding chin. She has the helpless look of a tiny new born baby . . . an appeal that is irresistible. Babyette is daintily dressed in long white Rayon Marquisette christening dress trimmed with lace and rosebuds. Lovely little christening coat of Rayon Marquisette with lace trimmed cuffs, collar and yoke . . . closed in front with tiny buttons and buttonholes. Matching bonnet. Long lace trimmed cotton slip, white rayon socks, white cotton diaper, and flannel shirt. Babyette's hands and head are of finest hard-to-break composition. Hands have tiny separate fingers. Head turns. Lashes and dainty baby mouth carefully painted by hand. Eyes remain closed. Hair molded and tinted. Body, arms and legs stuffed with soft cotton. Basket is 21 by 11½ inches. Read about Effanbee Dolls on Page 62.

48 T 3933M - 12-inch Babyette in Basket. Ship. wt. 7 lbs. $16.95

B
QUIET
C

Dolls A and B . . . 18 in. tall

Dolls C and D . . . 21 in. tall

Effanbee Dolls... Always Finest Quality

(A) EFFANBEE DOLL IN YELLOW FORMAL of airy Rayon Marquisette, trimmed with gay embroidery. White rayon slip and panties; rayon socks and imitation leather slippers with tiny heels. Beautifully formed body is all hard-to-break composition. Notice her graceful, lifelike hands! Movable head, arms and legs; sleeping Glassene eyes with real lashes. Her soft yarn hair can be combed in new styles (see Page 62). Comb included.
48 T 3841 18 inches tall. Shipping weight 3 lbs. 8 oz. $3.75

(C) EFFANBEE DOLL IN PINK RAYON MARQUISETTE. Her dainty dress has tiny puffed sleeves and is trimmed with ruffles. She wears a pink rayon slip, panties; imitation leather slippers; white rayon socks. She's all composition, with jointed arms and legs; movable head. Sleeping Glassene eyes; real lashes. New soft yarn hair (see Page 62). Comb included.
48 T 3843—21 inches tall. Shipping weight 4 lbs. $8.95

(B) EFFANBEE MAJORETTE DOLL in snappy Red and White uniform of cotton Twill, with gold color braid, epaulets and buttons. Full, white lined skirt; blouse and panties attached. High hat with real leather . . . tiny baton in her hand. Military boots (imitation leather) with tiny heels. All composition. Jointed arms, legs; movable head. Sleeping Glassene eyes; real lashes. New soft yarn hair can be combed in many styles (see Page 62). Comb included.
48 T 3842—18 inches tall. Shipping weight 3 lbs. $7.50

(D) EFFANBEE DOLL IN AQUA RAYON MARQUISETTE. Dress has ruffled hem, dainty tucked yoke, and big bow in back. White slip and panties, white rayon socks and imitation leather slippers with heels. All composition. Jointed arms, legs; movable head; sleeping Glassene eyes; real lashes. Her soft yarn hair can be combed into many attractive styles (see Page 62). Comb included.
48 T 3844—21 inches tall. Shipping weight 4 lbs. $8.95

BE SURE TO READ COMPLETE DETAILS ABOUT EFFANBEE DOLLS . . . SEE PAGE 62.

Doll E . . . 14 in. tall Doll F . . . 21 in. tall Dolls G and H . . . 22½ in. tall

Ideal's Glamorous Bridal Party Dolls

The Bridal Party Dolls above were created for us by Ideal, whose name stands for fine craftsmanship in dolls and toys. Dolls are all composition with turning, tilting heads, jointed arms and legs. All have sleeping Glassene eyes with real lashes, fine quality ringlet mohair wigs. Beautifully dressed, clothing is made of finest fabrics and fastens with tiny buttons. All dolls wear rayon socks and white imitation leather sandals with tiny heels. Be sure to read complete details about Dolls on Page 62

E FLOWER GIRL DOLL. Sweet as a picture in her Pink Rayon Taffeta dress with cunning sweetheart neck, short puffed sleeves. Skirt is very full with overskirt of pale pink net trimmed with blue stitching. Pink rayon panties attached to dress. Flowers in hair and at wrist. All composition with sleeping eyes, real lashes, mohair wig. Read details above.
48 T 3856—14 inches tall. Shipping weight 2 lbs. 8 oz. $5.95

F BRIDE DOLL. Beautifully dressed in White bridal gown of heavy Rayon Satin with sweetheart neck, very full skirt and long train. Slit in front of skirt shows wide lace on slip. Dress fastens in back with tiny buttons. Slip is fine quality rayon crepe with two-inch lace ruffle; lace-trimmed panties attached. Net veil with white flowers; white bridal bouquet. All composition doll with sleeping eyes, real lashes, mohair wig. Read details at left.
48 T 3855—21 inches tall. Shipping weight 5 lbs. $20.95

G H BRIDESMAID DOLLS. Dressed exactly alike in Pink Rayon Taffeta dresses with overskirts of pale pink net trimmed with blue stitching. Lace trimmed pink rayon taffeta panties. Each wears flowers in her hair and carries old fashioned bouquet. Fluffy pink net veils. All composition, sleeping eyes, real lashes, mohair ringlets. (Order at least two for doll wedding).
48 T 3857—22½ inches tall. Shipping weight each 3 lbs. Each. $17.95

USE YOUR CREDIT AND ORDER YOUR CHRISTMAS NEEDS NOW . . . SEE PAGE 19 FOR WARDS TIME PAYMENT TERMS.

Popular Priced Dolls... Dolls to Dress

A **14 In. Toddler In 2-Pc. Outfit** of cotton Pique. Short coat with cunning Peter Pan collar; long pants. Matching bonnet has ribbon ties. Socks and shoes. All composition doll with turning, tilting head; jointed arms and legs. Painted eyes and features. Hair molded and painted.
48 T 3928—Ship. wt. 1 lb. 12 oz. $2.10

B **19-In. Baby Doll** in fresh check cotton dress and bonnet with big ruffle that frames her face. She wears panties, socks, shoes. Head turns, tilts. Body is soft cotton stuffed. Head, arms, legs are composition. Eyes, hair and features are molded and painted on.
48 W 3907—Ship. wt. 2 lbs. 3 oz. $3.19

C **15-In. Undressed Girl Doll.** A horsman doll Just the right size for making and fitting clothes. All composition with jointed arms and legs. Turning, tilting head. Painted eyes. Mohair wig She wears socks and shoes. You can order below ready-made clothing to fit her.
48 T 3806—Shipping weight 2 lbs. $2.43

D **12¾-In. Undressed Chubby Toddler.** It's fun to make clothes for this cunning Horsman doll. All composition; jointed arms and legs. Turning, tilting head. Hair and features are molded and painted. Socks and shoes. You can order below ready-made clothing for her
48 T 3917 Shipping weight 2 lbs. $2.19

E **16½-In. Toddler Doll.** Made by Horsman. Her cotton dress and panties are nicely made. Felt bonnet has net ruffle, big bow. All composition; molded painted hair. Glassene sleeping eyes; real lashes. Movable head, arms, legs. She wears socks, shoes. (Dress fabric may vary.)
48 T 3918 Shipping weight 3 lbs. $5.50

F **17-In. Baby Doll** wearing a crisp cotton Print dress and bonnet with pleated ruffle. White cotton half slip, knit panties, little socks and shoes. She has soft, cuddly cotton stuffed body. Legs, arms, head are composition. Hair, eyes and features are painted on.
48 T 3927 Shipping weight 2 lbs. $2.25

DOLL CLOTHING IN SIZES TO FIT YOUR DOLLS

G **Dress and Bonnet for Baby Dolls** 12 to 23 in. tall. Cotton dress with straps. Attractive bindings. Assorted Prints. *State overall height*
48 T 4104—Ship. wt. 8 oz. 95c

H **Cotton Dress and Bonnet for Baby Dolls** 12 to 23 in. tall. Assorted Prints. Braid trim.
48 T 4105—Ship. wt. 8 oz. *State overall ht.* 95c

J **Dress and Bonnet for Girl Dolls** 12 to 21 in tall. Cotton Print, pleated cuffs, ruffled collar. Braid trim at waist. Assorted prints.
48 T 4102—Ship. wt. 8 oz. *State overall ht.* . 95c

K **Dress and Bonnet Set for Girl Dolls** 12 to 21 in. tall. Asst'd. cotton Prints, Rick-rack trim.
48 T 4103 Ship. wt. 8 oz. *State overall ht.* . .95c

L **3-Pc. Ski Suit for Girl Dolls** 12 to 21 in. tall. Soft pastel cotton Flannel jacket, attached hood; pants and belt. *State overall height.*
48 T 4100—Ship. wt. 12 oz. $1.39

M **3-Pc. Snow Suit for Baby Dolls** 12 to 23 in. tall. Soft pastel cotton Flannel suit, helmet, belt.
48 T 4101—Ship. wt. 12 oz. *State overall ht* .$1.39

State Overall Height of Doll . . Measure from feet to top of head Styles will be the same or similar to those shown below.

Lovable Baby Dolls...Well Made

(A) 21½-INCH BABY DOLL in White Organdy dress . . . Prettily trimmed at yoke with braid, lace and ribbon. Lace trim on cuffs, pastel stitching at hem. Neat button closing in back. Cunning bonnet of Organdy has a full double ruffle. Cotton slip and panties; shoes and socks. Cotton stuffed body is soft and cuddly. Legs, arms and turning head are composition. Dolly's glassene sleeping eyes have real lashes. Mouth and hair are painted on. She cries like a real baby

48 T 3935—Doll. 21½ in. tall. Ship. wt. 3 lbs. $6.69

(B) 21-INCH BABY DOLL CRIES "MAMA." Dressed in pretty White Organdy baby dress with wide hem trimmed in colored stitching. Lace trimmed neck and yoke . . . buttons and buttonholes. Matching bonnet is made like a real baby's . . . gathered in back with wide lace-framing lace-trimmed ruffle; ribbon ties. Cotton slip, knit panties . . . socks, shoes. Soft cotton stuffed body. Head, chubby hands, legs are composition. Sleeping glassene eyes, real lashes. Molded, painted hair. Cries "Mama."

48 T 3903—Doll. 21 in. tall. Ship. wt. 4 lbs. $6.25

(C) 20-INCH BABY DOLL in White Organdy dress with dainty lace-trimmed yoke. Short puffed sleeves. Matching bonnet with net trimming to frame her round little face. Bonnet ribbons tie under chin. She is wearing cotton slip, knit panties . . . socks and shoes. Soft cotton stuffed body. Legs, arms, head are composition, carefully molded. Chubby legs curved at knees like a real baby's. Head turns . . . hair molded and painted. Moving glassene eyes have real lashes. A Horsman Doll.

48 T 3915—Doll. 20 in. tall. Ship. wt. 2 lbs. $5.69

(D) 22-INCH BABY DOLL in beautiful White Organdy dress. Embroidered wide hem and bib with lace trim . . . well finished with buttons and button holes. Matching Organdy bonnet is trimmed with pleated net and ribbon ties. Cotton slip, knit panties . . . socks and shoes. Soft cotton stuffed body. Composition head, hands, legs. Chubby hands, dimpled knees are tinted pink. Rolling, sleeping glassene eyes have real eyelashes. Hair is molded and painted. She has a crying voice.

48 T 3902—Doll. 22 in. tall. Ship. wt. 4 lbs. 4 oz. $7.20

MINIATURE DOLLS IN COSTUME

Start a Doll Collection . . . a fascinating hobby—with the costumed miniature dolls at right and on opposite page. Just 6 in. tall . . . made of composition with movable arms. Saucy eyes and mouth are painted on. Hair is soft mohair ringlet curls. Dolls have tarlatan underskirts attached to dresses . . . cotton undergarments. All stand alone. Children like to play with them; older girls to collect them.

(J) MINIATURE BRIDE DOLL. Dressed in White Rayon Satin bridal gown with full skirt, net and ribbon trimmed. Fluffy net veil. (For Maid of Honor companion doll, order (M) on opposite page.)

48 T 4051—6 in. tall. Ship. wt. 12 oz. $2.59

(K) EUGENIA GOES TO CHURCH. Full skirted Rayon dress in assorted Floral Prints and solid color. Large Marlbou trimmed hat.

48 T 4053—6 in. tall. Ship. wt. 12 oz. $2.39

FOR CONVENIENT CREDIT TERMS USE WARDS TIME PAYMENT PLAN. SEE PAGE 19 FOR DETAILS.

...Dressed Like Real Babies

(E) 16-INCH BABY DOLL sweetly dressed in a crisp White Organdy pinafore over Cotton dress. Pinafore is trimmed in braid and colored stitching . . . dress of assorted solid colors or prints, has full skirt, cunning puffed sleeves. Matching bonnet with double ruffle framing her face, has ribbon tie. She is wearing neat cotton panties . . . socks and shoes. Cotton stuffed, cuddly body. All composition head, arms, legs. Head turns. Sleeping glassene eyes have real eyelashes. Hair is molded and painted-on. A Horsman Doll.
48 T 3912 Doll. 16 in. tall. Ship. wt. 2 lbs. $3.89

(F) 23-INCH BABY DOLL CRIES "MAMA." Finely made permanent-finish White Organdy dress, daintily smocked at yoke. Wide hem is hemstitched. Neckline trimmed with lace, sleeves bound in ribbon with bows. Matching white Organdy baby bonnet has lace-framing ruffle and small ruffle of net . . . ribbon ties. Cotton slip, knit panties, socks, shoes. Cotton stuffed body. Composition turning head, arms, curved legs. Hair is soft mohair curls. Rolling, sleeping glassene eyes with real eyelashes. Cries "Mama."
48 W 3901—Doll. 23 in. tall. Ship. wt. 4 lbs. $7.89

(G) 21-INCH BABY DOLL dressed in a pretty Floral Print Cotton dress and White Organdy pinafore. Lace-trimmed pinafore has full ruffles at shoulder, fancy stitching. Closes at back with buttons. Dress comes in assorted prints. Perky bonnet matches dress . . . has wide ruffle framing her face. Cotton slip, knit panties, socks and shoes. Cotton stuffed body. Composition head, arms, legs. Chubby little hands, dimpled knees. Sleeping glassene eyes have real eyelashes. Soft ringlet curls of Mohair. Crying voice.
48 T 3905 Doll. 21 in. tall. Ship. wt. 3 lbs. 12 oz. $5.69

(H) 23-INCH BABY DOLL in lovely, full, White Organdy dress. Fancy yoke trimmed with lace insert, ribbon and embroidery. Lace at cuffs. Ornamental stitching at bottom of dress. Pretty double-ruffled Organdy bonnet is just like a real baby's, ribbon ties. Dressed in cotton slip, panties, socks and shoes. Soft cotton stuffed body. Head, arms, legs are composition. Chubby baby hands, dimpled knees . . . turning head. Big glassene sleeping eyes, real lashes. Hair molded and tinted. Crying voice.
48 T 3936—Doll. 23 in. tall. Ship. wt. 3 lbs. 12 oz. $7.95

MINIATURE DOLLS

(L) (M) More miniature dolls. Composition. Movable arms; painted features, mohair curls. Tarlan underskirts attached to dresses, cotton undergarments. 6 in. tall. Stand alone.

(L) EUGENIA GOES TO LUNCHEON. Full Rayon Floral Print gown. Felt picture hat with open crown. Assorted colors.
48 T 4054—6 in. tall. Ship. wt. 12 oz. $2.39

(M) MAID OF HONOR. Full, Rayon Floral Print dress of assorted prints and colors. Trim velvet bodice and bows. Velvet hat has veil and long velvet streamers.
48 T 4052—6 in. tall. Ship. wt. 12 oz. $2.39

(N) (P) Miniature bisque dolls to dress. Painted features.

(N) GIRL DOLL.—Undressed. Jointed arms. Mohair wig.
48 T 3920—5¼ in. tall. Ship. wt. 8 oz. 63c

(P) BABY DOLL.—Undressed. Tiny doll with jointed arms, legs. Painted hair.
48 T 3939—4 in. tall. Ship. wt. 8 oz. 45c

Facts about Dolls

What Makes One Doll Cost More Than Another? The value of a doll to a child cannot be stated in terms of money; however, some of the factors that influence the cost of a doll are discussed here to serve as general information for doll purchasers. In the main, the cost of a doll is determined by the quality of material and workmanship in bodies, wigs, eyes and clothing. Size is a less significant factor, for often a small, fine quality doll may cost more than a much larger doll of poorer quality.

Bodies. Today most doll parts are composition. Though quality varies to some extent with ingredients used, it is determined more by length of time taken in making and finishing. Doll parts made slowly are stronger and less fragile. Quality is determined, too, by fineness of detail, in features. For instance on Effanbee fine dolls the fingers are separated; hands have life-like details such as tinted fingernails and tiny palm markings.

Wigs. Most doll wigs today are made of mohair—or combinations of mohair, wool and rayon. Human hair wigs are no longer available. A good mohair wig can be very attractive. Though many mohair wigs today are undesirable, the mohair wigs on the Bride Party dolls, Page 67, are the finest made this year. The yarn wigs on Effanbee dolls may be combed and braided and made into attractive "hair-dos." All Wards Doll wigs (except those on miniature dolls) are firmly sewed to cloth foundation . . . not just pasted on head.

Eyes. Eyes may be painted or of the movable, sleeping type. Though generally found on inexpensive dolls, painted eyes may be used with great artistry on fine quality dolls. Movable, sleeping eyes are of two types . . . the best are Glassene, have a celluloid iris over steel base . . . second quality, printed directly on metal, do not have the sparkle of Glassene eyes.

Clothing. Doll clothes vary in fabric, line, fitting and finishing. Though most dolls made in 1945 are poorly dressed because of the shortage of dress materials, the quality of the dresses on Wards Better grade Baby Dolls, Pages 60 and 61, has not been lowered, and the dresses on Wards Best quality dolls, Pages 62 to 67, are made of fine preWar quality fabrics. Garments fit nicely and finishing is detailed . . . dresses have button or snap closings. Clothing on less expensive dolls is not so carefully made. Fabric is not so fine . . . finishing is much less detailed . . . garments have pin closings.

THE FINEST DOLLS AVAILABLE TODAY

Effanbee and Ideal Dolls (shown on the next five pages) have the beauty and durability that good design, fine quality materials and painstaking workmanship alone can give. Composition parts on all Effanbee Dolls are made more carefully than the parts used on cheap dolls—this makes them less fragile. They are hand finished with several coats of enamel to look and feel like real skin. Effanbee Doll hands are beautifully modeled with separate fingers, rosy tinted nails and tiny palm markings. The wigs on the Ideal Girl Dolls (Page 67) are made of fine quality mohair and in our opinion no better can be had anywhere at this time. "Sweetie Pie" and "Baby Doll and Layette in Traveling Case," Pages 64 and 65, have Effanbee's "Tousle Toi" wig of genuine lambskin fur that can be cleaned with a damp cloth. Sparkling glassene eyes on Effanbee Dolls and Ideal Dolls are the best made today, all have real eyelashes. Attractive clothing worn by these dolls is well designed and carefully made of fine materials. Garments are nicely fitted and finished . . . have button or snap closings. All Effanbee dolls are packed in gift boxes.

Effanbee Bride Doll

A lovely bride in traditional White Satin, long flowing veil and dainty bridal bouquet . . . this exquisite doll will be a treasured possession and collecting her trousseau will intrigue her young owner. For bridal party tables, she makes an attractive centerpiece. Gown is white rayon slipper satin, fastens with tiny buttons. Full, stylish skirt has ruffle at hem. Net veil on rayon satin bridal cap, embroidered with tiny seed pearls. Long white slip; lace-trimmed panties; white rayon hose; sandals with tiny heels. All composition doll . . . beautifully modeled. Jointed arms and legs. Turning, tilting head. Life-like hands. Glassene sleeping eyes; real lashes. Beautiful wool, rayon and mohair wig . . . can be combed in new hair styles. Special plastic comb included.

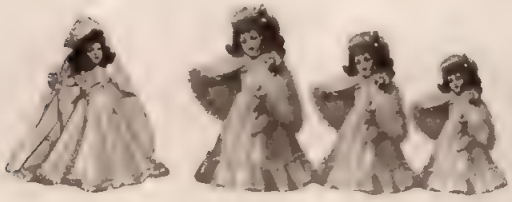
48 T 3838—21 in. tall. Ship. wt. 5 lbs. . . . $18.95

Effanbee Doll in Maribou Cape

A modern Cinderella . . . all set for the ball in a lovely Pale Pink Rayon Marquisette dress with full skirt—trimmed with deep ruffles and dainty dotted cloth rosettes. White, fluffy maribou cape and skull cap, rayon lined, and trimmed with pretty artificial orchid and silver ribbon bows. Attractive new cap sleeves on dress. Beneath it she wears a rayon slip and panties; white rayon stockings; white sandals. She carries a precious little drawstring pouch evening bag of metallic cloth with fluffy hankie inside. Doll is made of hard-to-break composition . . . beautifully sculptured. Exquisite hands with tinted fingertips; jointed arms and legs, finely painted mouth. Turning, tilting head. Sleeping Glassene eyes, real eyelashes. New wool, rayon and mohair wig . . . comb in many hair styles. Plastic comb included.

48 T 3835—27 in. tall. Ship. wt. 6 lbs. $39.95
48 T 3838—21 in. tall. Ship. wt. 4½ lbs. 25.95
48 T 3837—18 in. tall. Ship. wt. 3 lbs. 16.95

Order Your Christmas Gifts Early . . . Use Your Credit . . . See Page 19



Nationally known X-acto Hobby Knives, Tools

X-Acto Hobby Tools. Fine quality knives and equipment for craft work. Knives have detachable high carbon surgical steel blades . . . fit securely into easily controlled handles, simple to change. Gauged for delicate, medium and heavy work.

A X-Acto Balsa Stripper. Use with any X-Acto knife (not included) to cut 1/16 to 5/16-in. strips from balsa sheets up to 3/16 in. thick. Size 3 x 1½ in.
48 W 2511—*Postpaid*..... .$1.00

B X-Acto Whittlers' Knife Set. Aluminum handle, 5 blades for heavy duty work . . . whittling, wood carving, mat-cutting in slide-top wood chest.
48 W 2505 *Postpaid*..... $2.00

C X-Acto 21-Blade Knife Set. Contains 3 handsome aluminum handles for heavy, medium and delicate work . . . 21 blades. Hinged wood case.
48 W 2507—*Postpaid*..... $5.00

D X-Acto 12-Blade Knife Set. 3 handles . . . heavy one wood; others aluminum.
48W2506—In hinge-top wood chest. *Postpaid*.$3.50

E **F** X-Acto Drill Handles and High Speed Drills. All Aluminum with free wheeling caps. Cross-cut screw collet also accommodates knife blades. Bits, Precision tooled. *All Postpaid*
(E) 48 T 2513—Small Drill Handle.....75c
48 T 2538—Set of 6 High Speed Twist Drills for handle 48 T 2513 Sizes .026 to .039.....$1.39
(F) 48 T 2514 Larger Drill Handle. 75c
48 T 2539 -Set of 6 High Speed Twist Drills for handle 48 T 2514. Sizes .0465 to .0785 .... 95c

G X-Acto Block Plane. Plastic body shaped to fit hand with surgical steel single bevel blade, adjustable for depth of cut.
48 W 2510—Size 3½ by 1½ in. *Postpaid*. $1.00

H X-Acto Sander. Effective on straight, convex or concave surfaces. 3 grades of sandpaper in 6 refills. Wood construction.
48 W 2512—Size 5 1/16 by 2 in. *Postpaid*.....50c

J X-Acto Medium Duty Knife. Aluminum handle with six assorted large blades.
48 W 2504—In cardboard case. *Postpaid*.....$1.00

K X-Acto Light Duty Knife. Aluminum handle with six assorted small blades.
48 W 2503—In cardboard case. *Postpaid*.....$1.00

Extra X-Acto Blades. (Not Shown). *Postpaid.*
48 W 2508 -Set of 5 Blades for knife 48 W 2503 (Factory No. 1) and light duty knife in sets C and D (48 W 2507 and 48 W 2506) 50c
48 W 2509 -Set of 5 Blades for knives 48 W 2505 and 48 W 2504 (Factory No. 2, 5) and medium and heavy knives in Sets 48 W 2507, 48 W 2506 . .50c

SOLID WOOD AIRPLANE KITS . . . WITH PRE-FORMED PARTS

L to **P** Stromberger Kits. Solid wood. No carving. Materials, instructions. No paint. See Page 78.

L Consolidated Liberator B24 Army Bomber.
48 T 2515—18½-in. Wingspan. Wt. 1 lb. . . .89c

M Martin Marauder B26, U.S. Army Bomber.
48 T 2516—10¾-in. Wingspan. Wt. 12 oz. . . .53c

N Douglas Boston Bomber A20A. Built for R.A.F.
48 T 2517—10¼-in. Wingspan. Wt. 10 oz. .45c

P Curtis P40 Pursuit Plane. Fit on stand 5 in.
48 T 2518—6¼-in. Wingspan. Wt. 8 oz . 25c

R B-29 Boeing Super-Fortress Kit. Builds authentic solid scale model. All parts shaped and ready for assembly. Scaled to 1/96 actual size of plane. Model size completed; 16¼ in. long with 23½-inch wingspan.
48 T 2536—Ship. wt. 2 lbs.....$1.69

New Play Pistol made of Plastic

Merchandise on this page not available until Nov. 1.

Because we believe most Pistol and Holster sets available today for youngsters to be of unsatisfactory quality, we purchased fine quality top-grain leathers for these belts and holsters, added the beautiful plastic pistol described below, and bring you the finest sets and best values we ever offered.

A The finest quality play pistol we've seen for young "cops" and hard riding "cowboys." It's perfectly harmless, can not even shoot caps. Looks very realistic, molded from Black Plastic . . . a real .38-caliber pistol was used as model. Excellent quality, finely finished with clear-cut details, smooth, no rough edges. 8⅛ in. long. Boys (and girls) will have loads of fun with it and will be the envy of the "gang" when they pull out this shiny black "shootin' iron." Bullet chamber turns just like a real automatic when the "click" trigger is pulled. All Holster sets on this page include this pistol.
48 T 3308—Toy Pistol. Ship. wt. 1 lb. $1.59

B The Finest Toy Pistol, Holster, Belt Set we have ever sold. Selected Brown top-grain Cowhide holster, 11 in. long; split Cowhide belt 2¾ in. wide. Adjusts 25 to 28 in. Embossed design. Cutouts of top-grain cowhide; "jewel" and steel studs. Metal buckle, belt tip. Includes plastic pistol above.
48 T 3314 Ship. wt. 2 lbs. 4 oz $5.50

C Boys' and Girls' Pistol, Holster and 2-Buckle Belt Set. Black top-grain Cowhide holster 10⅝ in. long. Split Cowhide belt 2¾ in. wide. White applied designs of top grain cowhide. Red and Blue "jewel" studs. Metal buckles, strap tips. Adjusts from 24¾ to 27 in. Set includes plastic pistol above.
48 T 3313 - Shipping weight 2 lbs. 4 oz. $3.98

D Double Holster Set of Tan Split Cowhide. Decorated with steel studs, Red and White design painted on holsters. Holsters 9½ in. long. Matching belt 29 in. long, adjustable slide buckle. Includes two plastic pistols described at left.
48 T 3304—Shipping weight 1 lb. 12 oz. $3.79

E Double Holster and Pistol Set. Black split Cowhide holsters and belt, decorated with steel studs, White cowboy stencil. Two holsters 10½ in. long; belt 2 in. wide, size adjusts from 24 to 27 in. Set includes two plastic pistols shown above.
48 T 3305—Shipping weight 2 lbs. . . . $4.49

Tots will love these "happy-go-lucky" softies for play companions

They are wonderful rough-and-tumble toys with faces and figures to make youngsters laugh . . . gay companions to withstand strenuous play. Soft and huggable, with floppy arms and legs, they'll take many funny positions. All are dressed up . . . cotton stuffed, bodies covered with gaily printed cotton fabric, heads, hands and feet with soft pango a (cotton back rayon) plush. (No color choice.)

Bonzo, the funny Dog

[A] Bonzo is in a humorous mood all the time . . . will keep small fry amused for hours on end. His printed pressed mask face has jolly wrinkles and colorful painted features. A black button nose gives him an impish look. Wears gaily striped shirt and wide collar, tied with a bow. $4.89 27½-in. size

49 N 4019—27½-inch size. Shpg. wt., 2 lbs. 8 oz. . . . $4.89

49 N 4016—20½-inch size. Shpg. wt., 1 lb. 10 oz. . . . $2.89

Appealing, bashful Bear

[B] His coy, sweet facial expression will endear him to the little ones. He seems to beg "play with me!" with his wistful, big, black eyes. He's dressed up with collar, suspenders and wears a big, bright ribbon bow around his neck. Pressed mask face has painted features. $4.89 27½-in. size

49 N 4018—27½-inch size. Shpg wt., 2 lbs. 8 oz. $4.89

49 N 4014—20½-inch size. Shpg.wt., 1 lb. 10 oz. . . . $2.89

Irresistible, frisky Cat

[C] Little folks do love cats, especially when they are as cunning as this one. This huggable, little fellow makes a grand playmate. Big, shiny, green button eyes and satin felt lining give him a charm nobody can resist. He wears corduroy suspender pants and a big bow around his neck. $4.89 27½-in. size

49 N 4017—27½-inch size. Shpg.wt., 2 lbs. 8 oz. $4.89

49 N 4015—20½-inch size. Shpg.wt., 1 lb. 10 oz. $2.89

Comical, stuffed Clown

[D] Sure to delight any tot . . . has the cutest ... dress with a pert ... on his round, open face. His big, felt ears, hands, feet are stitched on color ... thread cotton yarn hair. Bends at waist so ... like funny poses. Firmly stuffed with ... covered with cotton ... gay rompers collar that appeal to children. About 17 in. tall. $2.98

49 N 3542—Shpg wt., 1 lb. ... oz. . . . $2.98

Cuddly wool plush Teddy Bear

[E] This charming imp will win ... heart with his ... button eyes, yarn nose and ... mouth with satiny red ... tongue . . . floppy arms and legs. Wears ... ribbon bow. Covered with ... brown wool pile plush; firmly stuffed with ... Two larger sizes have ... jointed heads. $2.96 11-in. size

49 N 4378—11-in. Shpg wt., 3 oz. . . . $2.96

49 N 4379—15-in. Shpg wt., 1 lb. . . . 4.93

49 N 4380—18-in. Shpg wt., 1 lb. 6 oz. 7.88

What all tots want . . . attractive, sturdy Table and Chair Sets of their own

Just the right size for the very young. Sturdy all-wood table, 17 inches high, 2 matching chairs, attractively enameled. **$7.39**

Let Santa bring your tiny son or daughter this beautiful table and chair set. They'll love to have furniture of their own. It's just what they need for delightful playtime. Carefully scaled to stand up under lots of rough use. Smoothly enameled in attractive white color with cheerful red trim. Easy to keep clean. Plywood table top measures 20x14 inches, stands 17 inches from floor. Neatly designed adult-style chairs have 8-inch by 8-inch plywood seats, 9 inches from floor. Overall height 18 inches. Table legs fasten to top with screws which are included. Very easy to assemble. Chairs are shipped set up as shown in illustration. (Cat. no. 79 N 08545) Shipping wt., 15 lbs. Set of table and two chairs **$7.39**

Larger size for boys and girls. Sturdy all-wood table, 24 in. high. Two chairs with nicely designed backs. Enameled gray, colorful decal on table top. **$9.39**

How happy your little boy or girl will be to find this lovely set under the Christmas tree. A fine table and two matching chairs of their very own. They'll enjoy using it for playing house, for crayoning and playing games. Smartly designed table and chairs are strongly constructed of sturdy wood, will last for years. Smoothly enameled in light gray with bright red trim. An attractive decal decorates table top. Easy to keep clean. Plywood table top measures 24x18 inches, stands 20 in. from floor. Overall height of chairs, 23¾ in., 13 ¼x10½-in. plywood seats 11 ¼ in. from floor. Table legs fasten to top with screws which are included. Easy to assemble. Chairs shipped set up as shown. (Dishes not included.)
79 N 08558 Shipping weight, 20 lbs. Set of table and two chairs **$9.39**

Sturdy all-wood Shoo-fly for baby

Baby will enjoy riding in this smooth-rocking shoo-fly. Safe and comfortable. Strong wood seat, back and foot-rest, plywood sides, beautifully enameled in white and ivory with red and blue trim. Dowel wood handle, dowel wood front and rear braces. 30 in. long, 13 ¼ in. wide, 19½ in. high. Screws for assembling included. **$4.98**
79 N 07584—Shipping weight, 9 pounds **$4.98**

Strong, rubber-tired Wheelbarrow

Just what children want for active play and their invented "chores." Tough plywood body is strong enough to hold a man's weight. Red and blue enamel finish. Decorated side panel-form strong legs, handle bars shaped for hand grips. Rubber-tired wheel, 5 in. in diam. Overall length, 29½ in. Easily set up, screws included. **$2.79**
79 N 07616 Shipping weight, 5 pounds **$2.79**

Handsome, upholstered Rocker

A rocking chair boys or girls will love. Designed for comfort and safety, it has a gentle rocking motion. Built of sturdy wood, enameled red. Cotton plaid cloth upholstered seat. Back is glued and glued into full-length back posts for extra strength. 20½-in. wood rockers. 9x11-in. seat, 9 ¼ in. from floor. Overall height, 18½ in. **$3.98**
79 N 08539 Shipping weight, 7 pounds **$3.98**

It's convenient to buy toys on Sears Easy Payment Plan. See page 182C for complete information

Deluxe 56-piece Farm Set

Set above is an exclusive Sears design . . . extra sturdy, durable. Appeals to youngsters particularly because its carefully molded animals are so lifelike in detail

- Colorful main barn of extra tough bookbinder board
- 14 realistic animals molded of durable composition
- Other pieces of strong cardboard in bright colors

$2.98

This fascinating set with its realistic pieces will give young would-be farmers hours of entertainment, and it's instructive, too. Look at the fine quality features. Animals are like those shown at lower right. Included are horse and foal, cow and calf, rooster and 4 chickens, hog and 2 pigs, turkey and cow; they come in assorted colors.

Note that the extra big main barn is precision die-cut of genuine bookbinder board which is exceptionally strong and durable. Has stall building, gables, stalls and even a litter carrier which slides in and out to clean. R-V-Lite transparent material is attached over windows. Size of barn, 22x14x13 in. high. Other buildings, implements, trees, and fencing (in proportional size) precision die-cut of strong cardboard. Included are silo, granary, corncrib, toolshed, brooder, horse barn, five trees, 18-piece fence and 3 gate posts, tractor, plow, wagon, and automobile.

All pieces, except animals, come flat. It's lots of fun and easy to set them up. Complete instructions.—Why not include this set in your Easy Terms purchase. See page 182C for full information.

79 N 06454—Shipping weight, 10 pounds .....56-piece set $2.98

Set of 14 molded Farm Animals . . . realistic

79c

Any boy or girl will be thrilled with these true-to-life miniatures . . . made of long-lasting, hard-to-break composition. Variegated brown to their tiny features. Set includes horse and foal, cow and calf, hog and 2 pigs, rooster and four hens, turkey and dog. Assorted colors. Size of horse, 3¾ x 4 in. high; others in proportion. Not shown above.

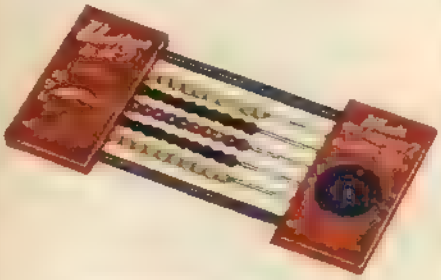
49 N 6447—Shipping weight, 1 pound .....14-piece set 79c

Fine Pre-school Toys stimulate young minds . . . provide hours of fun

Fascinating Joint-a-Toy

Teaches toddlers how to use their little hands and minds. Stimulates their imagination, helps develop their skill. They'll enjoy putting the different pieces together and watching the jointed figures take action before their very eyes. 15 wood pieces in bright, harmless colors. Illustrated chart.

49 N 3807—Shipping weight, 1 lb. 8 oz. **$1.19**



Instructive three-in-one Toy

Something every boy and girl would like to have. 3 complete toys in one to provide many hours of absorbing and instructive play. *Educational clock* with movable hands teaches children how to tell the time. 2 *Calculator with Magic Dial* teaches them simple addition. 3. *Counting frame* has 5 rows of colorful beads on metal rods. Sturdy wood construction, smoothly finished in brilliant colors. Overall size 15½x8½ inches.

49N3864—Shipping weight, 1 lb. 12 oz. **$1.59**

Sturdy wood roller Push Toy

Has 3 features that toddlers enjoy: brilliant colors, action, sound. Ingeniously designed. When pushed along, colored wood rings slide down the center rod giving beautiful rainbow effect and making pleasing clickety-clack sound. Strong 2-section jointed wood handle about 28 inches long. Can be separated to save storage space.

49 N 5403 Shipping weight, 1 lb. 12 oz. **$1.19**

Little tots love these colorful Pull Toys

A Twirly Blocks. It's fascinating to watch the blocks go round as toy is pulled. Set of 8 blocks with alphabet and numerals 1 to 9 teaches children to build and spell out words. When blocks are removed it's a cute little wagon. Made of durable, smooth hardwood, lettered in attractive colors. Overall size, 7x9¾ in. long. Pull cord.

49 N 3603—Shipping weight, 3 lbs. **$2.19**

B All-wood Oil Truck. This realistic miniature truck is sized to be used with active tots. They'll have a grand time hauling or pushing it around and playing fuel delivery. Sturdily built to stand up under lots of rough play. Has six easy-running wood wheels. Beautifully finished in bright colors. Overall size, 11x3x2 ¼ in. high.

49 N 5408—Shipping weight, 1 lb. 4 oz. **79c**

C Clever Ferris Wheel. Any youngster will be overjoyed to find this fascinating action toy under the Christmas tree. When pulled along the star-like wheel turns in gay, carousel cars, revolves and the cute clickety-clack gives a soft click-clack noise. Made of durable, smoothly finished wood. Overall size, 15x7x10 inches high.

79 N 05434—Shipping weight, 3 lbs. **$1.89**

Tiny boys like to have trains, too. These two models are just right for the little ones. They are simple and easy to operate. Can be pushed or pulled any place. No tracks required, no mechanism to hurt little fingers. Have smooth-rolling shaped wooden wheels . . . easy on rugs and floors.

D De-luxe 6-unit Wood Train. Big engine, open tender, box car, coal car, oil car and caboose. Made of sturdy wood, attractively painted in gay colors. Cars connect with strong fiber couplers. Length, 4 feet, 7 inches, 2¾ in. high; 3 in. wide.

49 N 5490—Shipping weight, 3 pounds **$2.98**

E 3-unit Wood Train. Engine with tender, gondola, and caboose; connected with strong fiber couplers. Durable wood cars are painted in bright colors. Length, 28 inches; 4¼ in. high; 2¾ in. wide.

49 N 5417 -Shipping weight, 1 lb. 10 oz. **$1.29**

F Elsie, the Cow. The young ones will be thrilled with this new amusing action toy. As they pull it along Elsie, the famous cow, bobs and turns. Her tail brushing the moon and the turning Pet bow trims her silk-like cord tail. Cow has body of wood and "wood center" fiberboard, easily colored. Size, about 7¾x5½x10 in. high.

49 N 5428—Shipping weight, 1 pound . . **$1.89**

6-room "Happitime" Doll House . . . fully furnished

- Sears exclusive design; smartly decorated inside and out
- Sturdy fiberboard; overall size 28½x18x2[illegible] in. high
- 24 pieces of fine furniture, 21 of wood, 3 of fiberboard

$2.98

You'll delight [illegible] dream come true . . . a doll house with 6 [illegible] rooms plus library and den. Chase's [illegible] drawing. [illegible] above. Quaint exterior decorations [illegible] realistic selection [illegible] doll houses. Rich [illegible] papers [illegible] spaces [illegible] living room [illegible] one bedroom, [illegible] and rugs and pictures. 24 pieces of [illegible] wood with [illegible] davenport, chair, [illegible] coffee table, end table and lamp [illegible] living room, table and two chairs for dining room, bed, highboy, table and lamp for [illegible] bedroom, white enameled [illegible] tub, washstand and [illegible] for bathroom; white enameled table, headboard, stove, refrigerator and sink for kitchen. House is [illegible] sturdy, wallboard [illegible] Available after November 1st.

49 N 2105 Easy to assemble. Instructions included. Shipping weight, 4 pounds $2.98

Deluxe Tekwood House . . . 6 brightly decorated rooms

Any [illegible] would be delighted to receive this beautiful doll house for [illegible]. This large [illegible] just waiting [illegible] keeping. It's extra strong, [illegible] of tough tekwood [illegible] heavy wall paper covering. Exterior [illegible] in bright colors, with [illegible] cupboards, mirror, [illegible] and wallpaper [illegible] Casement windows and doors [illegible] open and close. Overall size 25¾ [illegible] high. Easy [illegible] instructions and screws included.

79 N 02104 Shipping weight, 5 pounds $4.98

$4.98

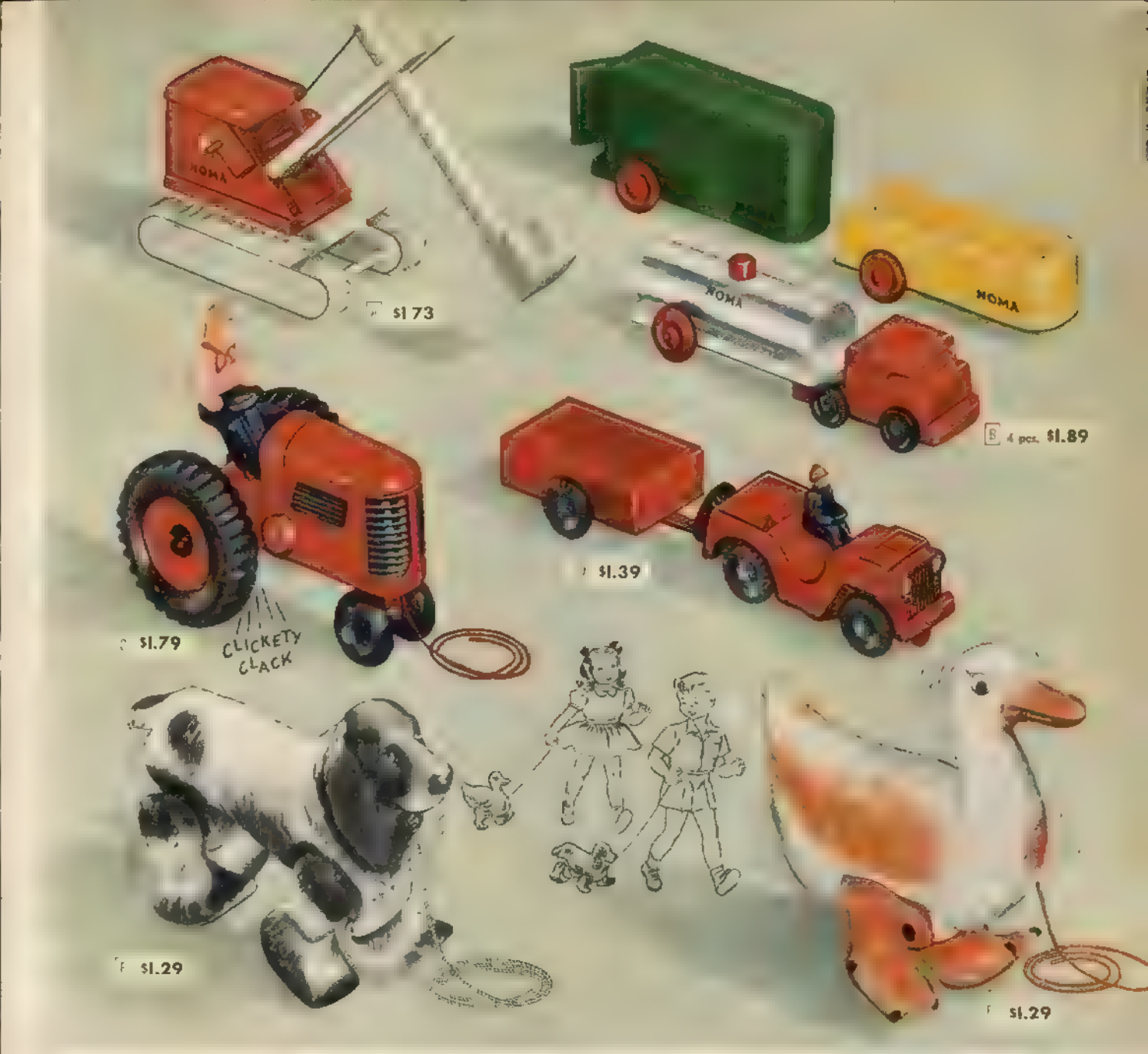
Sturdy Tekwood construction . . . 6 rooms

This stately colonial [illegible] House with six rooms will thrill [illegible] housekeeper as she goes about her daily domestic [illegible] duties. Made [illegible] strong tekwood [illegible] center wall, heavy [illegible] paper covering. Exterior is attractively [illegible] bright colors, with contrasting [illegible] and door trim. Casement windows and door [illegible] to open and close. Impressive [illegible] with [illegible] and door step. Overall size 25¾ [illegible] high. Easy to put together, [illegible] instructions and screws included.

49 N 2103 Shipping weight 4 pounds 12 ounces $2.98

$2.98

Attractive furniture for every room of her doll house on page 40



A $1.73

B 4 pcs. $1.89

C $1.79

D $1.39

E $1.29

F $1.29

For a happy playtime . . . fine Toys by NOMA, makers of famous NOMA Lights

A Colorful Steam Shovel. What fun your child will have with this interesting toy. He'll get such pleasure pretending to be an engineer picking rocks, jams, etc. . . . working the crane to dig grooves or lift loads. Skillfully made of colorful heavy painted wood . . . smoothly finished. Crib swings on swivel. Simple to raise and lower shovel by turning crank. Crib with shovel extended measures 9x5x10 inches. This fine toy will be a favorite of any active child.
49 N 5454—Shipping weight, 1 pound. $1.73

B 4-Piece Trailer Set. This colorful, neatly designed, wooden trailer set makes a thrilling Christmas gift for any youngster who likes a real Hi-Lo or wheeled hauler to the moving van with its door that opens for extra storage space or the Lo-Boy tractor and tilt-up trailer. Each has sturdy black wheels and self-support at front. Hauler is 4½x3½x3¾ inches high. Trailers average about 7½ inches in length. Wooden hitches on front of each trailer.
49 N 5475—Shpg. wt. 2 lbs. 4 oz. . . Set $1.89

C Realistic Farm Tractor. Give this model tractor to that youngster you're especially fond of. . . if he loves playing "farmer", he'll be delighted to make such an important addition to his "farm". More than a toy, it produces a sound like the motor of a real tractor. Red molded composition, black engine details. Swivel front wheels, trailer hitch in back. Rear wheels resemble balloon-type tires. A skillfully designed toy. Pull cord attached. Size of tractor, 8½x5½x7 inches.
49 N 5471—Shipping weight, 2 pounds. $1.79

D Farm Jeep and Trailer. How pleased your little boy will be when he gets this farm jeep set! His "pretend" farm will be ready up-to-date. Jeep is copied from an army jeep. Sturdily constructed of sturdy molded composition with attractive bright enamel finish. Trailer is made of wood with composition wheels. Colorful little farmer has colorful painted-on clothes. Overall size, about 3¾x3⅛x12⅝ in. long.
49 N 5450—Shipping weight, 1 lb. 8 oz. . $1.39

E Friendly walking doggie. Doggie actually waggles along like a real puppy on a leash as tot pulls string. Imagine the thrill kiddies will get by owning a toy that acts so real! They'll soon learn to love pulling the dog along, fascinated by the realistic motion of his ears. His painted coat is like baby lamb and his eyes have an appealing expression that's sure to endear him to everyone. Made of strong molded composition. Size, 11x7½x4 in.
49 N 5436—Shipping weight, 1 lb. 8 oz. . $1.29

F Waddling Duck with moving eyes. It's true . . . he really waddles when pulled along. Kiddies will adore the funny walk of his flat, web-like feet; they'll be enchanted by the shiny glances from his roaming black eyes. Made of strong composition molded to resemble a real duck. Beautifully painted with colorful details that appeal to children. Sturdy pull cord attached.
size 8x5x8½ inches high
49 N 5437—Shipping weight, 1 lb. 8 oz. $1.29

It's easy to buy toys for your youngsters on Sears Easy Payment plan . . . see page 182C

To make her dreams come true . . . famous Mme. Alexander dolls, none finer made

These Mme. Alexander dolls are superbly designed, carefully made, with features that plainly say "finest quality" sturdy composition bodies, jointed arms and legs, turning heads; lifelike sleeping eyes with long lashes, and soft, curly mohair wigs. Bride dressed in white and others in dainty pastel rayon dresses . . . all have a just-right look that will make them marvelous play companions for now, the precious keepsakes of the future. (Assorted color wigs and dresses; sorry, no choice of color.)

Beautiful Bridesmaid Doll

Ⓐ What a lucky child your little girl will be if you let Santa bring her this gorgeous bridesmaid doll! She's so charming and gracious, she'll snare the heart of any little girl. Her gown, made in grown-up fashion-model style, is lovely [illegible] marquisette in a delicate [illegible] pastel shade, with endearing [illegible] tails. She carries a chic matching muff, pretty trimming. Her hat is a charm[illegible] ever was one . . . made all of flowers. [illegible] a dainty slip and panties; cute slippers.

$9.98 10-inch

49 N 3369 21½-in. size. Shpg. wt., 4 lbs. $11.98
49 N 3368 18-in. size. Shpg. wt., 3 lbs. 9.98
49 N 3367—15-in. size. Shpg. wt., 2 lbs. 6.64

Demure Bride Doll

Ⓑ She's sweet and lovely as only a bride can be. Finding her [illegible] Christmas tree will be [illegible] exclusive [illegible] for [illegible] daughter, for she's truly exquisite . . . jewel-like and precious. Her filmy fingertip veil [illegible] carries a diminutive corsage. Her traditional white gown has a sweetheart neckline and a full, swirling skirt, is made of either shimmering rayon satin or sheer rayon net (sorry, there is no choice of fabric). Even her undies are extra nice, and she wears tiny imitation leather slippers.

$12.39 22-inch

79 N 03377 22-inch size. Shpg. wt., 4 lbs. $12.39
49 N 3390 17-inch size. Shpg. wt., 3 lbs. 10.39

Winsome Flower Girl

Ⓒ A chubby little flower girl in her first party dress . . . she's an [illegible] entertaining companion, as [illegible] lively, and ever so appealing. When she's discovered underneath the Christmas tree she's sure to [illegible] oughs of delighted surprise from your young daughter. Her long, full-skirted dress is made of sheer rayon net, flower buds adorn it, and there's a wreath of matching flower buds in her soft, shining curls. She wears an underskirt of fine material, and tiny white slippers.

$14.98 24-inch

79 N 03372 24-in. size. Shpg. wt., 4 lbs. $14.98
49 N 3371 —20-in. size. Shpg. wt., 3 lbs. 11.98
49 N 3370 —16-in. size. Shpg. wt., 2 lbs. 8.84

A $8.98 22 in.

B $7.98 20 in.

$5.98 18 in.

D $8.98 22 in.

E $8.86 20 in.

F $5.98 16 in.

G $7.98 19½ in.

Lovable Dressed-up Dolls

Little girls yearn for them

Each of these beautiful dolls has endearing details that will make her a favorite playmate of any little girl. High-grade materials, painstaking craftsmanship are your assurance of fine quality. All have sturdy, polished composition bodies with jointed arms and legs, turning, tilting heads, life-like sleeping eyes with thick lashes; lustrous mohair wigs and carefully designed wardrobes in assorted colors (sorry, no choice) All wear rayon socks, imitation leather slippers.

[A] **Play Time Doll.** What little mother wouldn't be happy to call this little girl doll her own? She wears an adorable dress of fine cotton with matching panties, styled as a clever one-piece garment . . . and a darling large hat frames her life-like face
49 N 3393 —22-inch size. Shpg. wt., 4 lbs. . **$8.98**

[B] **Pretty Pinafore Darling.** Prim pigtails give her a captivating school girl look. Charmingly dressed in assorted print cotton frocks, matching panties, crisp, sheer cotton pinafore; gay felt hat.
49 N 3359 —18-inch size Shpg. wt., 3 lbs **$5.98**
49 N 3378 —20-inch size. Shpg wt., 4 lbs..... 7 98

[C] **Pert Party Girl.** This sweet little miss is cute as can be . . . all dressed up in a lovely, smartly trimmed party frock of sheer cotton print. Her big felt hat is tied with a saucy bow under her chin. She wears well-made dainty slip and panties
49 N 3361 —18-inch size. Shpg. wt., 3 lbs. . **$5.98**
49 N 3379—20-inch size. Shpg wt., 4 lbs..... 8 49

[D] **Lounging Lassie.** She's a radiant beauty . . . little girls will find her stylish lounging ensemble especially appealing. Gaily striped and trimmed blouse harmonizes with her beautifully tailored flannel slacks and matching, sweeping flannel robe with colorful trim. An artificial flower adorns her shiny mohair curls.
49 N 3394 20-inch size. Shpg. wt., 4 lbs **$8.98**

Baby Dolls to thrill her

All are carefully made of fine materials . . . have durable composition heads, hands and feet; stuffed, cotton-covered bodies, delicate tinted faces, sparkling sleeping eyes with thick lashes; shiny wigs. Each garment is patterned after a real baby's, in pastel shades or white (Sorry, no choice of color of dresses or wigs.) All wear undies, rayon socks and imitation leather slippers.

These two adorable babies, created by famous Mme. Alexander, have particularly fine details. Their delicate, cherubic faces have a lifelike look They are completely disarming . . . bound to win the heart of any little girl.

[E] **Large Party Baby** in sheer, rayon marquisette dress, bonnet; curly rayon wig.
49 N 3277 20-inch size. Shpg. wt, 3 lbs . **$8.86**

[F] **Small Party Baby** in rayon marquisette dress and bonnet. Lustrous mohair wig.
49 N 3276 —16-inch size Shpg wt., 2 lbs....**$5.98**

[G] **Smartly dressed Baby.** Wears a beautiful coat over her dainty embroidered sheer cotton dress and bonnet to match. Mohair wig
79 N 03189 – About 24-inch.
Shipping weight, 4 pounds **$11.98**
49 N 3188 –About 22-inch Shpg wt., 3 lbs . **9.98**
49 N 3187—About 19½-inch. Shipping weight, 2 pounds 8 ounces. **$7.98**
49 N 3186 –About 17-inch. Shpg wt., 2 lbs. **5.98**

Give your little girl her dream doll this Christmas

New, adorable sleepy-time Twins with bunting

Snuggled in their cozy bunting, one baby is always peacefully asleep, the other yawning, on the brink of dreamland expressions are perfection! Twice the delight their lucky little mother no end to keep her busy dressing, undressing! Each doll, can be taken out of bunting . . . wears shirt, diaper, four-length night robe of soft material and lisle trimmed socks. A famous artist designed these realistically molded heads. Hands have life-like fingers and dimples. Fine quality materials and workmanship. Heads, hands, feet of durable composition, stuffed bodies Two-pocket, 21x[illegible] bunting of blanket-knit [illegible] pastel shade, [illegible] Made by Horsman, one of the leading doll makers

$9.98 Set

49 N 3165—Size of each doll, about 15 inches Shipping weight, 4 pounds . Set **$9.98**

Pigtail Girl

She's a cuddly stuffed doll with mask face painted features and yarn hair Well-made cotton dress, assorted styles No color choice Size, 18 inches Shipping weight, 1 pound 8 ounces.
49 N 3575. . . . . . **$2.92**

Pert Stuffed Doll

Her winsome mask face has painted features, yarn hair. Pretty cotton dress, assorted styles and colors No color choice. About 20¾ inches tall. Shpg. wt., 2 lbs
49 N 3558 . **$3.99**

Sleeping-eyes soft Doll

Cute lifesome cotton-stuffed doll with mask face. Sparkling, glass-like eyes with thick lashes go to sleep. Charming cotton dress with matching bonnet, panties. Fine yarn hair. No color choice. 17-in. size Shpg wt., 2 lbs
49 N 3576. . . . . . **$4.88**

Let Sears Easy Terms help you pay. See page 182C

Rose O'Neill's Kewpie

- The original Kewpie, made of molded composition
- Has turning, tilting head, jointed arms and legs
- Stands alone . . . takes all kinds of active poses
- Wears brief, sweetly styled printed cotton sunsuit

Mom, Dad, or Auntie will remember the most popular doll of all time—the Rose O'Neill Kewpie, with her fat tummy, her flirtatious painted eyes, her shy winning grin. The new Kewpie has all the old spirit —there's impishness written all over her, from the tip of her perky molded hair-do to the toes of her chubby feet. She has jointed arms and legs, a turning, tilting head, and a cunning up-to-date outfit to add to her personality. **$2.58**

Merry as Santa Claus himself, Kewpie has a unique charm that's sure to make her an appreciated gift. Children will love to play with her, putting her into the dozens of active poses she will take; adults will enjoy having her for a gay room decoration. Kewpie comes appropriately dressed in a printed cotton sunsuit (assorted styles), white rayon socks, and tiny imitation leather slippers. And she's a nice size: 12¾ inches tall.

49 N 3435—Shipping weight, 1 pound 12 ounces.....**$2 58**

Exquisite Princess Anna Dolls

- 6½-inch miniature dolls . . . each one a real collector's gem
- Lustrous mohair wigs . painted eyes, mouths . . . pantalettes
- Full-skirted removable rayon dresses (assorted styles, colors)
- Stand alone; have strong composition bodies, movable arms

A She's superb—the glorious Summer Princess, radiantly beautiful . . . really exquisite. Her stunning gown is shimmering rayon with gold-color trim. A jewel of a doll
49 N 3015—Shipping weight, 1 pound.....**$2.59**

B The Snow Princess, with her dark hair and her strikingly lovely white dress, is bewitching. Her dainty hat is snowflake-soft. A gorgeous doll.
49 N 3014—Shpg. wt., 1 lb...**$2.59**

C Demure and disarming is the Colonial Doll . . . a charming little lady ready to go calling in her quaint period outfit. She has powdered hair, wears a captivating off-the-face hat.
49 N 3013—Shpg. wt., 1 lb....**$2.59**

D The bridesmaid is enchanting in her swirling pastel gown—made to be admired. She wears a wide-brimmed hat, carries a corsage.
49 N 3012—Shpg. wt., 1 lb...**$2.59**

E Sweet as the strains of a wedding march is the bride in her traditional white gown. Her veil is adorned with diminutive orange blossoms, she carries a lovely corsage.
49 N 3011—Shpg. wt., 1 lb...**$2.78**

For a Christmas gift that's sure to please choose a Portable

One of the finest Christmas gifts you can buy, one the whole family can enjoy . . . a brand new portable. Sears has a wide selection of popular makes and models. All portables are same price whether cash or terms, due to standard practice. Use Sears convenient Easy Terms Order blank. Use your typewriter—earn money with it—while you pay!

A Royal "Arrow" Portable

- Magic Margin saves time
- Standard keyboard
- Fast typebar action

$57.77

$12 down
$5 monthly

Royal's Magic Margin sets automatically; simply flip lever. Touch control adjusts key tension. Black crinkle finish. Pica type. Weighs 14 pounds 10¾ ounces in case. Case included. Prepaid.

Available after Nov. 15th.

3N04505T—Cash or Terms $57.77

How to Order Typewriters! All portables available but we recommend shipment by freight or express. State which. Charges prepaid either way. Due to standard practice on mail order sales, there is no carrying charge for Easy Terms purchases.

B Royal Deluxe Portable

- Exclusive touch control lever
- Quiet operation
- Tabulator stops

$68.37

$16 down
$5 monthly

Royal's best . . . so well constructed and dengoed that its sound of operation has been reduced to a mere whisper. Equipped with famous accelerating typebar action for greater speed in typing. An ideal machine for school, home or business use. Has all the features of "Arrow" model at left—plus easily adjusted touch set tabulator for paragraphing, column work, etc. Paper lock holds paper firmly in place. Standard 4-row keyboard. Black crinkle enamel finish. Pica type. Carrying weight, 15 pounds 6 ounces. Case included. Shipped prepaid.

Available after November 15th.

3N04508T—Cash or Terms.$68.37

C Remington Deluxe Model 5

- Touch regulator to adjust key tension
- Tabulation key
- Standard keyboard

$57.75

$12 down
$5 monthly

"Deluxe" in appearance and performance . . . designed for speed and durability. Extra long left [illegible] lever gives great speed and ease of movement in typing. "Self-starting" paragraph key indents paragraphs, tabulates columns with a light tap of the finger. Easy-to-operate standard 4-row keyboard. Concave keys fit fingers comfortably. Has new design paper table with paper scale, black enamel and nickel finish. Pica type. Weighs [illegible] pounds. Case included. Shipped prepaid.

Available after November 15th.

3N04548T—Cash or Terms $57.75

D Remington Noiseless #7

- Quiet speed-typing mechanism
- Tabulator stops
- Standard keyboard

$83.51

$21 down
$6 monthly

No noise . . . no clatter! It types in a whisper. Quiet, because it operates on the revolutionary basic principle of short stroke action. Perfect for travelers, writers, professional men and women to whom noiseless operation is important. Smooth and streamlined with plenty of easy-going speed . . . a machine you'll be proud to own. Uses pressure printing rather than impact printing. Has all other features of Model [illegible] at left. Black enamel and chrome finish. Standard 4-row keyboard. Pica type. Weighs 17 pounds 8 ounces in case. Case included. Shipped prepaid.

Available after November 15th.

3N04544T—Cash or Terms $83.51

Shop at Sears the easy, convenient way . . . buy by mail and save

New charmers for her Doll family . . . fine quality at moderate prices

Baby with flirting, rolling eyes

A Young "mothers" will love caring for this winsome baby who coyly rolls her eyes from side to side, and closes them to go to sleep. Pastel-flowered rayon dress with matching bonnet, baby-style underwear, shoes, socks. Turning composition head, molded hair, cotton-stuffed body; composition arms and legs. About 17½ inches tall. Shpg wt., 2 lbs 4 oz.

49N3144 . . . . . $4.98

Chocolate-colored Babies

B They're darling, with their big, rolling goo-goo eyes. Assorted style gay cotton dresses. Composition heads, molded hair; cotton stuffed bodies covered with fabric to match dresses.

49N3134 23 inch size. With wide-brimmed bonnet. Shipping weight, 2 lbs. 12 oz. $3.98

49N3133—19-inch size. With hair ribbon; no bonnet. Shipping weight, 2 pounds . $2.73

Stuffed Mammy Doll

C This colored mammy is so full of personality, anyone would find her amusing. She seems to be saying "Yes'm" every time you look at her. Jolly dark mask face, rolling eyes. Firmly stuffed; stands alone. Colorful cotton dress (assorted styles), big apron, traditional kerchief, earrings. 18-inch size. Shipping weight, 2 lbs.

49N3546 . . . . . $2.79

Snowsuit Baby

D Rosy-cheeked tyke with glass-like sleeping eyes; turning composition head, molded hair, cotton stuffed body. Lower arms and legs of composition; has crying voice. Removable bright rayon and cotton fleece suit, bonnet.

49N3168—22-inch. Shipping weight, 4 lbs. $6.98

49N3167—18-inch. Shipping weight, 3 lbs. 4.98

Snowsuit Dolly

E Adorable child with lustrous mohair curls and shining glass-like eyes that go to sleep . . . just the right size for a little girl to take care of easily. Turning composition head, cotton stuffed body. Composition arms, legs composition from knee down. Pastel rayon and cotton fleece snowsuit, matching hood. Shipping weight, 2 lbs. 6 oz.

49N3132—16 in. tall. $3.59

Baby in peaked hood

F So wide-eyed and innocent-looking, any little tot will find her a charming companion. Chubby body, arms and legs are stuffed with cotton, covered with kitten-soft rayon and cotton fleece (assorted colors). Matching hood has fur-like edging, ribbon tie. Turning composition head, molded hair, painted eyes. 16 inches tall. Shipping weight, 1 lb. 8 oz.

49N3560 . . . . . $2.39

Stuffed Doll in bolero

G This dolly is really fashion-wise! She wears a bolero and hat, both up-to-the-minute in style, made of bright-colored, ribbed fabric; cotton print dress (assorted styles); cotton felt bootees, and printed cotton socks that are sewed right onto her legs. Doll is firmly stuffed; has mask face, painted features, rayon plush hair. 21 inches tall. Shpg wt., 2 lbs.

49N3559 . . . . . $4.89

Toys are available on Sears convenient Easy Terms . . See page 182C for full information

Beautifully dressed Baby Dolls

- Expertly molded composition heads with molded hair.
- Soft, well-proportioned stuffed bodies, crying voices
- Shiny glass-like sleeping eyes with thick lashes
- Lovely, well-made dresses with matching bonnets

A This lovable baby doll will thrill any little girl. She's adorable with her chubby, beautifully molded face . . . turning head. Made of fine quality materials. Arms from elbow down and legs from knee down of molded composition. Rich-looking, trimmed dress and matching bonnet, cotton slip and panties; rayon socks, imitation leather slippers.

79 N 03175—24-inch size. Dainty cotton organdy dress and bonnet in pastel-color or white (no choice). Shpg. wt., 4 lbs... **$7.98**

49 N 3172—22-inch size. Same outfit as above. Shipping weight, 2 pounds 12 ounces..... **5.98**

49 N 3171—19-inch size. Wears dress and bonnet of cotton fabric with colorful floral print. Shipping weight, 2 lbs..... **4.98**

B **25-inch Baby Doll.** Has all quality features listed above *plus* composition shoulders, full-length composition arms, chubby legs. Composition head tilts and turns. Cries "ma-am." Crisp cotton organdy dress; cotton slip, panties; rayon socks, imitation leather slippers.

79 N 03176—Shipping weight, 4 pounds..... **$9.98**

"Plassie"—with lifelike plastic head

- Plastic head, the latest in doll development . . . sturdier, longer lasting with facial details closest to human features.
- Sleeping eyes, thick lashes; crying voice, movable head.
- Luxurious, full-skirted dress with rich embroidery trim.

She's a little girl's dream come true . . . captivating, the nearest thing to a real baby. The artistically shaped plastic head makes her look more life-like than any doll you've ever seen . . . practically unbreakable, so she will outlast many other dolls . . . can be turned into many bewitching positions. (Heads of the 17-inch and 19-inch dolls tilt as well as turn.) Hair and realistic arms and legs are molded composition, body is cotton-stuffed. Her rosy, cherubic face has expertly molded features—pert tiny nose, sweet rosebud mouth, and shell-like ears. Her winsome, glass-like eyes are shadowed by thick lashes. Plaintive, crying voice makes her all the more endearing to her little mother

She wears an exquisite sheer cotton dress, richly trimmed with delicate embroidery; pastel color or white (sorry, no choice) Her face is framed by the dainty ruffles of the matching bonnet, tied with pastel ribbon. Cotton slip and panties, rayon socks and imitation leather slippers complete her outfit

49 N 3164—Size, about 22 inches. Shipping weight, 3 lbs. 8 oz... **$7.98**

49 N 3163—Size, about 19 inches. Shipping weight, 2 lbs. 12 oz.....**$5.98**

49 N 3162—Size, about 17 inches. Shipping weight, 2 lbs..... 4.98

Bit o' Heaven

ENCHANTING ANGEL DOLL . . . truly a Bit o' Heaven with sweet cherub face, satin wings and halo of stars and flowers. Pink rayon-and-cotton fleece body, cotton stuffed, downy covering on head [illegible]

48 T 1420—Bit o' Heaven [illegible] $1.98

Sleepyhead Dolls, deluxe Teddies... other soft toys

Ⓐ PERCALE MORSE. Soft yellow [illegible] features, [illegible] and [illegible]. Mane and tail of cotton [illegible]. [illegible] cotton filled. About 9½ [illegible] Assorted prints and [illegible] tail [illegible]. Ship. wt. 2 oz. . 98c
48 T 464

Ⓑ PERCALE FAWN. Most gentle of [illegible] fellows, a flower [illegible]. Cute little coat of waterproof, [illegible] Stenciled [illegible] features, tail [illegible] Filled. About 11 [illegible] Assorted [illegible] prints. [illegible] Ship. wt. 2 [illegible] 98c
48 T 1455

Ⓒ WATERPROOFED SOFT BALL. [illegible] Inflate the rugged [illegible] Soft [illegible] Ship. wt. [illegible] 87c
48 W 427

Ⓓ PERCALE PUP. Soft friendly pup [illegible] Fluffy wool [illegible] coat [illegible] Stenciled features. Floppy ears stuffed [illegible] filled. About 12½ [illegible] Assorted colors, [illegible] prints, whichever [illegible]
48 W 424 Ship. wt. 2 oz. [illegible]

Soft Toys. Soft [illegible] choice [illegible] Pleasing to [illegible] [illegible] [illegible]

Doll E . . . 14 in. tall. Doll F . . 21 in. tall. Dolls G and H . . 22½ in. tall

Ideal's Glamorous Bridal Party Dolls

The Bridal Party Dolls above were created for us by Ideal, whose name stands for fine craftsmanship in dolls and toys. Dolls are all composition with turning, tilting heads, jointed arms and legs. All have sleeping Glassene eyes with real lashes, fine quality ringlet mohair wigs. Beautifully dressed, clothing is made of finest fabrics and fasteners with tiny buttons. All dolls wear rayon socks and white imitation leather sandals with tiny heels. Be sure to read complete details about Dolls on Page 62.

(E) FLOWER GIRL DOLL. Sweet as a picture in her Pink Rayon Taffeta dress with cunning sweetheart neck, short puffed sleeves. Skirt is very full with overskirt of pale pink net trimmed with blue stitching. Pink rayon panties attached to dress. Flowers in hair and at wrist. All composition with sleeping eyes, real lashes, mohair wig. Read details above.
48 T 3856—14 inches tall. Shipping weight 2 lbs. 8 oz. $5.95

(F) BRIDE DOLL. Beautifully dressed in White bridal gown of heavy Rayon Satin with sweetheart neck, very full skirt and long train. Slit in front of skirt shows wide lace on slip. Dress fastens in back with tiny buttons. Slip is fine quality rayon crepe with two-inch lace ruffle; lace-trimmed panties attached. Net veil with white flowers; white bridal bouquet. All composition doll with sleeping eyes, real lashes, mohair wig. Read details at left.
48 T 3855 —21 inches tall. Shipping weight 5 lbs. $20.95

(G) (H) BRIDESMAID DOLLS. Dressed exactly alike in Pink Rayon Taffeta dresses with overskirts of pale pink net trimmed with blue stitching. Lace trimmed pink rayon taffeta panties. Each wears flowers in her hair and carries old-fashioned bouquet. Fluffy pink net veils. All composition, sleeping eyes, real lashes; mohair ringlets. (Order at least two for doll wedding.
48 T 3857 22½ inches tall. Shipping weight each 3 lbs. Each. $17.95

For a Christmas gift that's sure to please choose a Portable

One of the finest Christmas gifts you can buy, one the whole family can enjoy . . . a brand new portable. Sears has a wide selection of popular makes and models. All portables are same price whether cash or terms, due to standard practice. Use Sears convenient Easy Terms Order blank. Use your typewriter—earn money with it—while you pay!

A Royal "Arrow" Portable

- Magic Margin saves time
- Standard keyboard
- Fast typebar action

$57.77

$12 down
$5 monthly

Royal's Magic Margin sets automatically; simply flip lever. Touch control adjusts key tension. Black crinkle finish. Pica type. Weighs 14 pounds 10¾ ounces in case. Case included. Prepaid.

Available after Nov. 15th.

3N04505T—Cash or Terms $57.77

How to Order Typewriters! All portables available but we recommend shipment by freight or express. State which. Charges prepaid either way. Due to standard practice on mail order sales, there is no carrying charge for Easy Terms purchases.

B Royal Deluxe Portable

- Exclusive touch control lever
- Quiet operation
- Tabulator stops

$68.37

$16 down
$5 monthly

Royal's best . . . so well constructed and dengoed that its sound of operation has been reduced to a mere whisper. Equipped with famous accelerating typebar action for greater speed in typing. An ideal machine for school, home or business use. Has all the features of "Arrow" model at left—plus easily adjusted touch set tabulator for paragraphing, column work, etc. Paper lock holds paper firmly in place. Standard 4-row keyboard. Black crinkle enamel finish. Pica type. Carrying weight, 15 pounds 6 ounces. Case included. Shipped prepaid.

Available after November 15th.

3N04508T—Cash or Terms.$68.37

C Remington Deluxe Model 5

- Touch regulator to adjust key tension
- Tabulation key
- Standard keyboard

$57.75

$12 down
$5 monthly

"Deluxe" in appearance and performance . . . designed for speed and durability. Extra long left [illegible] lever gives great speed and ease of movement in typing. "Self-starting" paragraph key indents paragraphs, tabulates columns with a light tap of the finger. Easy-to-operate standard 4-row keyboard. Concave keys fit fingers comfortably. Has new design paper table with paper scale, black enamel and nickel finish. Pica type. Weighs [illegible] pounds. Case included. Shipped prepaid.

Available after November 15th.

3N04548T—Cash or Terms $57.75

D Remington Noiseless #7

- Quiet speed-typing mechanism
- Tabulator stops
- Standard keyboard

$83.51

$21 down
$6 monthly

No noise . . . no clatter! It types in a whisper. Quiet, because it operates on the revolutionary basic principle of short stroke action. Perfect for travelers, writers, professional men and women to whom noiseless operation is important. Smooth and streamlined with plenty of easy-going speed . . . a machine you'll be proud to own. Uses pressure printing rather than impact printing. Has all other features of Model [illegible] at left. Black enamel and chrome finish. Standard 4-row keyboard. Pica type. Weighs 17 pounds 8 ounces in case. Case included. Shipped prepaid.

Available after November 15th.

3N04544T—Cash or Terms $83.51

Shop at Sears the easy, convenient way . . . buy by mail and save

Boy's Drill Rifles...Combat Helmets

(A) **Shock Helmet with Camouflage Net.** Intended for standard Army helmets but rejected due to slight imperfections. The U.S. Army permits use for boys after part of neck flange has been trimmed off for identification so helmets can not be used by spies. Boys all over America are proudly wearing them. Durable Plastic, comfortable and lightweight, with adjustable inner headband and chin strap. Helmets are Dark Green with mesh camouflage net that adds a touch of realism and permits the youthful "soldier" to stick twigs and leaves in nettings for young "jungle fighters." (Net not Army reject.) *Mailable.*

48 W 1105 Ship. wt. 1 lb. 95c

(B) (C) Actual reproductions in size, shape and design of famous *Garand* and *Carbine* rifles used by American forces on European and Pacific battle fronts. Genuine Walnut stocks were originally made for the Army, were rejected because of slight imperfections in wood. Refinished so practically all defects are concealed. Wood is substituted for metal parts so they're lighter in weight than regular rifles—weigh only 2½ lbs. A six-year old can handle them, but because they're actual reproductions, they can be used as training rifles by drill teams or in military schools. Also prized as decorations for dens . . . look like the real thing.

(B) **Garand Type Wood Drill Rifle.** Smooth Walnut wood stock. Parts usually made of metal are wood with gunmetal finish to resemble metal plate. Length overall 37½ in. Trigger makes loud "Click" when pulled.

48 T 3315M—Ship. wt. 5 lbs. *Mailable.* $2.98

(C) **Carbine Type Wood Drill Rifle with Magazine.** Solid Walnut stock is smoothly finished. Parts usually made of metal are wood with gunmetal finish to resemble metal plate. Length overall 35¼ inches. Trigger makes a loud "Click" when it is pulled.

48 W 3301M—Ship. wt. 3 lbs. *Mailable.* $2.98

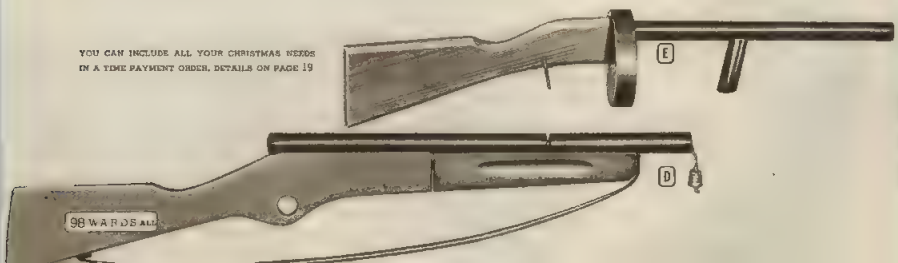
(D) **Commando Repeating Wood Gun.** Pump action; cork bangs. Varnished stock. Black barrel. Shoulder sling

48 T 3311 28¾ in. long. Ship. wt. 1 lb. 12 oz. *Mail.* .$1.39

(E) **Chattermatic Wood Sub-Machine Gun.** Turn crank to make machine gun sound. Black barrel. *Mailable*

48 T 3312—23¼ in. long. Ship. wt. 1 lb. . 89c

YOU CAN INCLUDE ALL YOUR CHRISTMAS NEEDS IN A TIME PAYMENT ORDER. DETAILS ON PAGE 19



New Play Pistol made of Plastic

Because we believe most Pistol and Holster sets available today for youngsters to be of unsatisfactory quality, we purchased line quality top-grain leathers for these belts and holsters, added the beautiful plastic pistol described below, and bring you the finest sets and best values we ever offered.

Merchandise on this page not available until Nov. 1.

A The finest quality play pistol we've seen for young "cops" and hard riding "cowboys." It's perfectly harmless, can not even shoot caps. Looks very realistic, molded from Black Plastic . . . a real .38-caliber pistol was used as model. Excellent quality, finely finished with clear-cut details, smooth, no rough edges. 8¾ in. long. Boys (and girls) will have loads of fun with it and will be the envy of the "gang" when they pull out this shiny black "shootin' iron." Bullet chamber turns just like a real automatic when the "click" trigger is pulled. All Holster sets on this page include this pistol.

48 T 3306—Toy Pistol Ship. wt 1 lb $1.59

B The Finest Toy Pistol, Holster, Belt Set we have ever sold. Selected Brown top grain Cowhide holster, 7 in. long, split Cowhide belt 2¾ in. wide. Adjusts 25 to 28 in. Embossed design. Cutouts of top-grain cowhide; "jewel" and steel studs. Metal buckle, belt tip. Includes plastic pistol above.

48 T 3314—Ship. wt 2 lbs. 4 oz $5.50

C Boys' and Girls' Pistol, Holster and 2-Buckle Belt Set. Black top-grain Cowhide holster 10½ in. long. Split Cowhide belt 2¾ in. wide. White applied designs of top grain cowhide. Red and Blue "jewel" studs. Metal buckles, strap tips. Adjusts from 24¾ to 27 in. Set includes plastic pistol above.

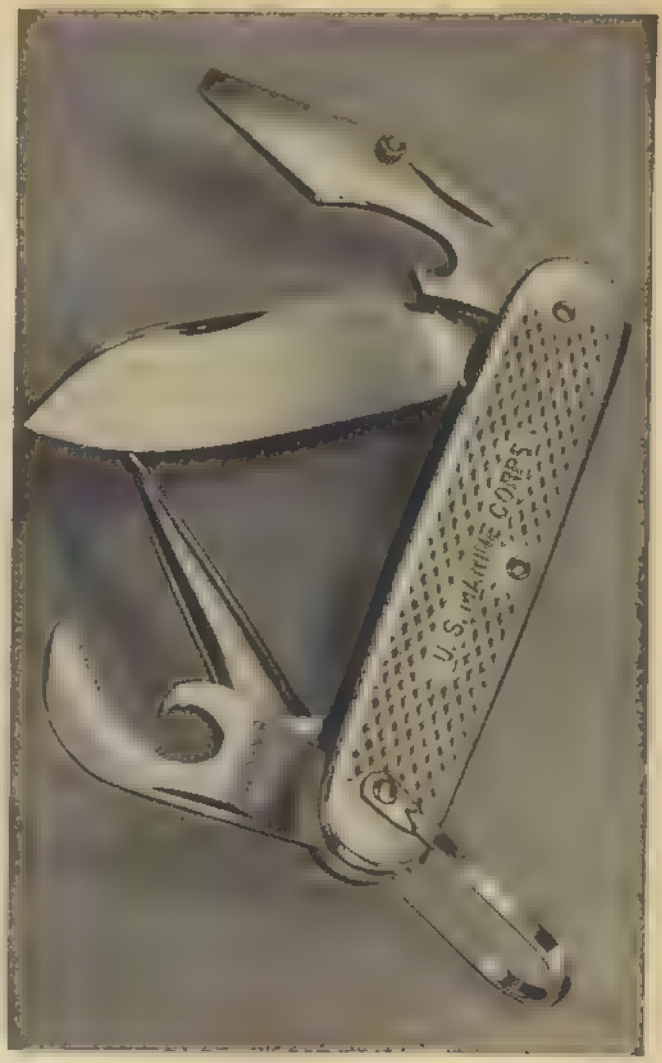
48 T 3313—Shipping weight 2 lbs. 4 oz $3.98

D Double Holster Set of Tan Split Cowhide. Decorated with steel studs. Red and White design painted on holsters. Holsters 9½ in. long. Matching belt 29 in. long, adjustable slide buckle. Includes two plastic pistols described at left.

48 T 3304—Shipping weight 1 lb. 12 oz. $3.79

E Double Holster and Pistol Set. Black split Cowhide holsters and belt, decorated with steel studs, White cowboy stencil. Two holsters 10½ in. long; belt 2 in. wide, size adjusts from 24 to 27 in. Set includes two plastic pistols shown above.

48 T 3305—Shipping weight 2 lbs $4.49



Eastman Camera and Movie Film

Eastman film is again available! Take pictures of your Christmas decorations . . . use fast film. Manufacturer's Excise Tax is included wherever it applies

Eastman Kodachrome for natural color movies. Prices for 8mm. and 16mm shown below include developing and return transportation in U. S. Films [illegible]

Film for 16 millimeter movie cameras

Regular Kodachrome, Daylight or Weston 8 and 16 Speed

3 N 6782 . . . -ft. roll **$8.83**

3 N 6706 50-ft. Magazine for Eastman and Bell & Howell 5.16

Kodachrome Type A. For pictures with artificial light. Weston 12,

3 N 6798 —100-ft. roll **$8.83**

3 N 6799—50-ft. Magazine for Eastman and Bell & Howell 5.16

8 mm. film—25-ft. double roll. Makes 50-ft. projection roll

3 N 6785—Kodachrome Regular type for daylight **$3.77**

3 N 6723—Kodachrome Type A for artificial light . . . 3.77

3 N 6748—Kodachrome Magazine for daylight 4.13

3 N 6772—Kodachrome Magazine Type A (artificial light) . . . 4.13

Eastman Black and White Film, Verichrome—orthochroma ic Film. **Super-XX**—fast, panchromatic film. Use indoors or outdoors. 8-exposure rolls. Postpd.

Verichrome Cat. No.	Film No.	Price Each	Size Inches	Super-XX Cat. No.	Film No.	Price Each
3 N 6736	V-127	27c	1 ⅛x2 ½	3 N 6761	127	33c
3 N 6738	V-120	33c	2 ¼x3 ¼	3 N 6762	120	38c
3 N 6752	V-620	33c	2 ¼x3 ¼	3 N 6764	620	38c
3 N 6739	V-116	38c	2 ½x4 ¼	3 N 6763	116	42c
3 N 6753	V-616	38c	2 ½x4 ¼	3 N 6765	616	42c
(Daylight 50; Tungsten 24)				(Daylight 80; Tungsten 64)		

Eastman Kodabromide Enlarging Paper Be[illegible] [illegible] Weight [illegible] Paper (G) surface. No. 2, normal emulsion; or No. 3, contrast emulsion (for flat negatives). *Be sure to state emulsion wanted. Postpaid.*

Single weight (F) Surface	3 N 6611— 5x7 inches.	12 sheets for **38c**
	3 N 6613—8x10 inches	12 sheets for **81c**
Double weight (G) Surface	3 N 6612— 5x7 inches.	12 sheets for **49c**
	3 N 6614—8x10 inches.	12 sheets for **$1.03**

U. S. Armed Forces Jack Knife

Brand new! Offered for the first time to the general public . . . just in time for Christmas giving . . . just what every man on your "gift list" will want

Combined screwdriver and bottle cap opener blade

Can opener blade; leaves cut edge of can smooth

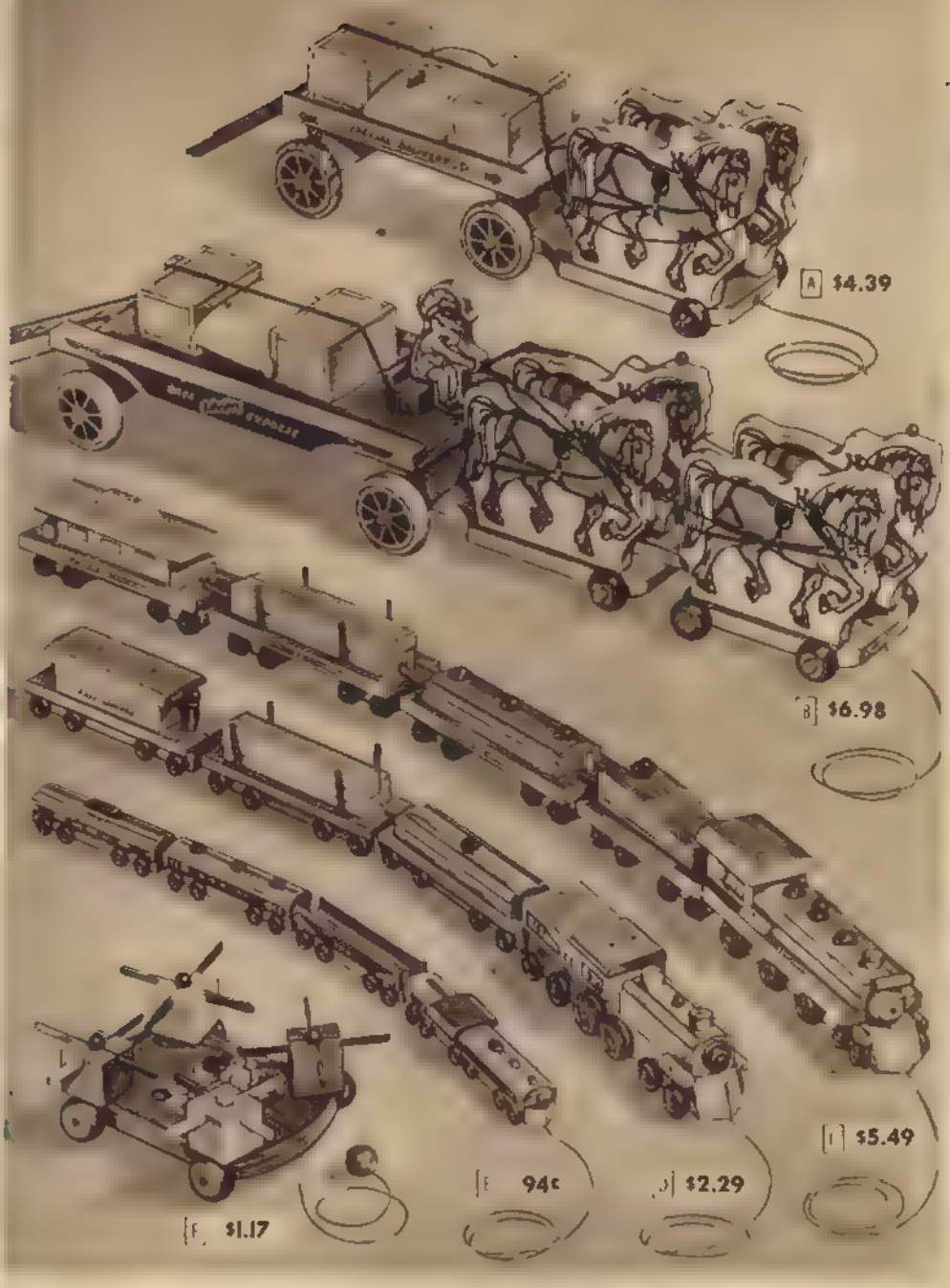
Handy punch blade for making holes in leather

- A great knife for campers, hunters, fishermen, farmers, construction men, boy scouts, travelers, in fact, every man who works or plays outdoors
- A knife built for long, hard service . . . made entirely of chrome vanadium steel, stainless steel and solid brass. Made to "take it" regardless of the job

$1.98

The most useful and finest made pocket knife we have ever seen . . . *but new.* Designed by the leading knife manufacturers, at the request of the Government, to give the most in combined service and utility to the men in the armed services. All blades are forged from chrome vanadium steel . . . they will never corrode. Strong stainless steel handle, cross-ribbed for firm grip. Rust-resistant shackle, 1 inch long, firmly riveted through handle. Genuine solid brass linings . . . the mark of a real pocket knife. Knife is 3⅝ inches long, not including shackle. Four blades as follows: heavy 2½-inch spear blade; leather punch or awl blade; screwdriver and bottle cap lifter blade, and new type can opener blade. A lasting gift

9 N 9471—Shipping weight, 8 ounces. $1.98



Sturdy Toys for young teamsters and railroaders

A 22½-inch 2-horse Dray and Load. Imagine the thrill of any youngster who receives this realistic dray. It's so much fun to play delivery. Wagon is loaded with two packing cases (unfinished wood), one sack (soft padded bag), toy rope to hold them fast and chute for sliding them to the ground. Horses turn on swivel. Sturdy wood construction. Natural varnish finish with colorful painted details. Overall size, about 22½x7½x8⅜ in. high.

79 N 05460—Shipping weight, 5 pounds . . . **$4.39**

C Big 5-unit Wood Freight Train. Sturdy engine 4 ft. 9 inches long. Has locomotive with separate tender, lumber car loaded with lumber, oil car, caboose, all on double-truck wheels. Natural varnish finish with colorful details. Fiberboard couplers. A thrilling gift for any youngster.

79 N 05467—Shipping weight, 8 pounds . . **$5.49**

E Low-priced 4-unit Wood Freight Train. About 27 inches long. Little tots will have lots of fun pulling it along. Consists of locomotive, oil car, open end freight car, and caboose. Nicely made of varnished wood with colorful painted details.

49 N 5431 Shipping weight, 1 lb. 4 oz. **94c**

B 38-inch 4-horse Dray with Driver. Same extra sturdy, solid wood construction as dray at left but built to handle heavy loads. Has driver with realistic painted details. First dashing team turns on its own swivel, takes corners easily. Equipped with three packing cases, two padded sacks, unloading chute and anchor rope . . . everything needed in an up-to-date delivery service. Overall size, length, about 38 inches; width, 8 inches; height, 10 inches.

79 N 05485—Shipping weight, 9 pounds. . . . **$6.98**

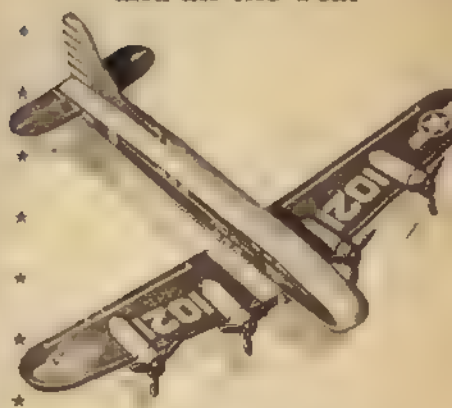
D 4-unit Wood Freight Train. Medium size, 38 inches long. Ideal for the young ones. Locomotive with attached tender, lumber car with load of lumber, oil car and caboose; connected with fiberboard couplers. Natural varnish with bright details.

79 N 05459 Shipping weight, 4 pounds **$2.29**

F Propeller-Tot action Pull Toy. Just the thing to delight little toddlers for hours on end. Four blocks twirl and "propellers" make clicking noise as toy is pulled. Neatly enameled in appealing, bright colors on attractive wood cut-out base. Sturdy, solid wood construction. Overall size, 8½x5 inches.

49 N 5453 Shipping wt., 2 lbs. 0 oz. **$1.17**

Fun at Christmas and all the Year



Giant Plane with 4 dummy motors. A wonderful gift for any air-minded youngster. Sleek body of solid, varnished wood is 21 inches long, wingspread 25 inches. Turning three-blade propellers on each of the four dummy motors. Wings and tail of strong ¼-inch Masonite Presdwood. Colorful details and realistic insignia like big air liners. **$1.98**

49 N 5491—Shpg wt., 2 lbs. 8 oz. **$1.98**

5-power Spotter Scope for spotting airplanes. (Identification charts not included.) 12 lenses, polished brass cases. Plastic eyepiece mounted between hardwood sections. Leatherette paper cover. 13¾ in. long extended. **49c**

49 N 6407 Shipping wt., 10 oz. . **49c**

16-point Compass. Accurate, scientifically designed. A great gift for lovers of the out-of-doors. Convenient pocket size, 2 inch diameter, fits in right. Smoke-proof plastic case. Specially mounted needle on jeweled pivot. Luminous dial for night use. Also has sighting device on outer case for heliographic signalling (sun flashing). **49c**

49 N 6419—Shipping wt., 10 oz. **49c**

Set of four Walking Dolls. Dolls toddle down any slant-ed board. No key or spring. They walk by themselves. 4½-inch dolls of wood and fitted cloth, assorted styles, colors and trim. (Board not included.) **$1.00**

49 N 6445—Shipping wt., 1 lb. . **$1.00**

Folding Blackboard-Desk and Chair Set

$11.65

This good-looking, portable desk and chair set is just the kind your youngsters have been hoping for. Imagine their delight when they'll discover it under the tree on Christmas morning. How happy they'll be to have a place of their own for work and play. Desk top lifts and adjusts in upright position. Reverse side has blackboard finish . . . grand for drawing and playing school.

Skillfully designed . . . complete set folds readily for easy carrying or storing. Carefully built of sturdy, selected wood . . . will give long service. Neatly enameled in light gray with green trim. Top measures 18½x16¾ inches, 25 inches from floor. Seat with comfortable back rest measures 10⅜x10½ inches, 14 inches from floor. Total length when set up, 32 in.; when folded 52 in. Shipped freight or express.

79 NM 8574—Shipping weight, 16 pounds..... $11.65

"Thank you, Santa. This beautiful phone is just what I needed to make my calls"

Realistic Toy Telephone to delight any tot!

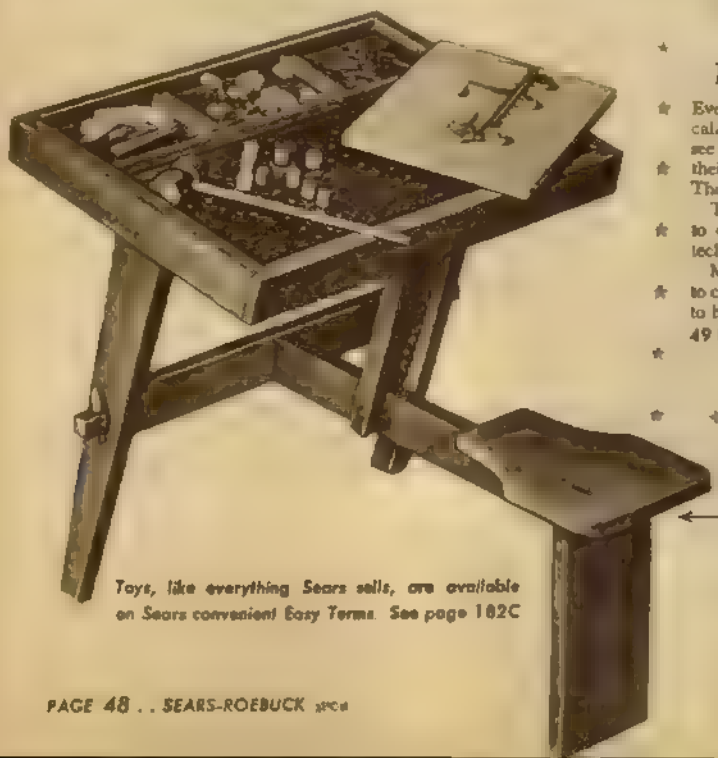
$1.89

Every little girl and boy yearns for a toy phone to make those imaginary calls. After all, it's quite important that they call Daddy at the office to see how he's getting along; and they need to have big conversations with their little friends. So give them this phone, a small-scale version of the real thing. The line is sure to be busy all the time, carrying gay messages and newsy chatter.

The clicking dial is just like the one on a real telephone, with letters and numerals to dial those imaginary phone numbers. Children can learn correct telephoning technique—how to dial, how to answer—from practice with this phone.

Made of beautiful, gleaming black plastic, smoothly finished . . . has no rough edges to cut or scratch . . . cleans easily with a damp cloth. Just the right size for youngsters to handle. Base measures 3½x5 inches, receiver is 6¾ inches long.

49 N 2401—Shipping weight, 1 pound..... $1.89



3-in-1 Peg, Nail and Play Table for tiny tots

$1.79

How the young ones love to bang and pound! This type of play hammering is excellent for youngsters as it helps develop eye-and-hand coordination, gives the youngster a place where he can pound, build, and create without damaging good furniture. Sturdy maple stained wood frame table with Masonite top, measuring 16x12¾ inches. Has three compartments. Shaped saddle seat 8½ inches from floor. Child can hammer the gay colored wooden pegs into the perforated table top; he can make designs by nailing the bright-colored wood pieces to the composition board. Table complete with pegs, nails, mallet, board. An ideal Christmas gift for lively youngsters that will really keep them happy and busy for hours.

49 N 3694—Shipping weight, 6 pounds..... $1.79

Toys, like everything Sears sells, are available on Sears convenient Easy Terms. See page 102C

Handsome Stick Horse

Giddap, horsie! Children will be thrilled with this sturdy, brightly painted wood horse. Cloth reins. Solid wood wheels that are easy to attach. Overall length, 32 inches. A fine exerciser, good for hours of fun

69c

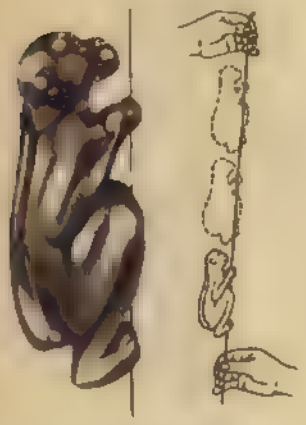
79 N 06410—Shipping wt., 2 lbs.. 69c

Ride or pull this Toy Horse

Colorfully painted, all-wood horse. Tot can sit and paddle with his feet. Easy-rolling wheels Realistic head. Overall 14½x17x8 inches. Seat 7½ inches from floor Easy to assemble. Assorted styles

$1.69

49 N 5472—Shpg. wt., 4 lbs . $1.69

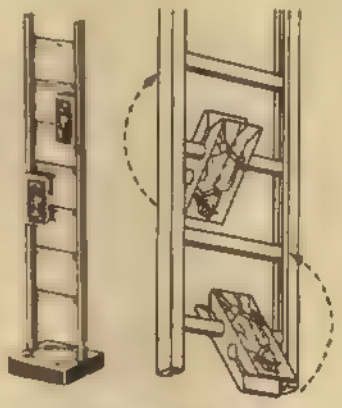


Climbing Monkey

Jocko is loads of fun for all the family. When you pull the string he climbs up and down and makes noises like a monkey. Made of plastic, size 7x3 inches.

67c

49 N 5706—Shpg. wt., 10 oz.67c

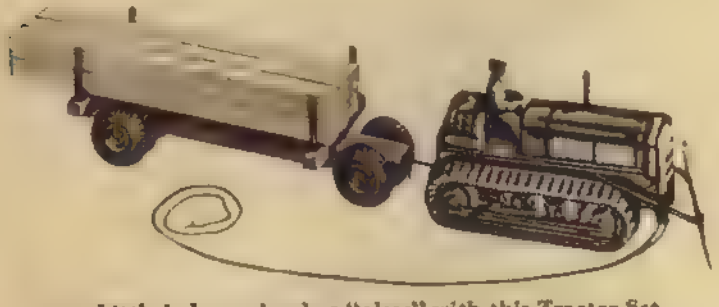


Tumbling Firemen

An ingenious toy, and so amusing! You'll be amazed at the agility of the 2 firemen who have a tumbling race down the 16-inch wood ladder. Base is made of pressed fiber, decorated wood block "firemen." A safe, simple toy

49c

49 N 6418—Shipping weight, 10 oz...49c



Little lads can haul or "plow" with this Tractor Set

Choose this set for your little boy this Christmas. He'll be fascinated with the bright red tractor; he'll push or haul lumber, and plow through snow. Tractor, driver, trailer, 6 pieces lumber, and metal plow are detachable 7½-inch molded composition tractor moves on concealed wooden rollers; wooden trailer rolls on 6 composition wheels. Overall length, 19½ inches.

$2.39

49 N 5473—Shipping weight, 4 pounds. . . . . Complete set $2.39

Big 72-piece Farm Set

There's nothing quite like a toy farm to enchant the children. This 72-piece set is complete in detail to make it very real looking, a wonderful gift

- Big barn 19x21½x11¾ inches high; 44 animals
- House, sheds, silo, farm implements, fencing
- All made of strong cardboard, easy to assemble

$1.99

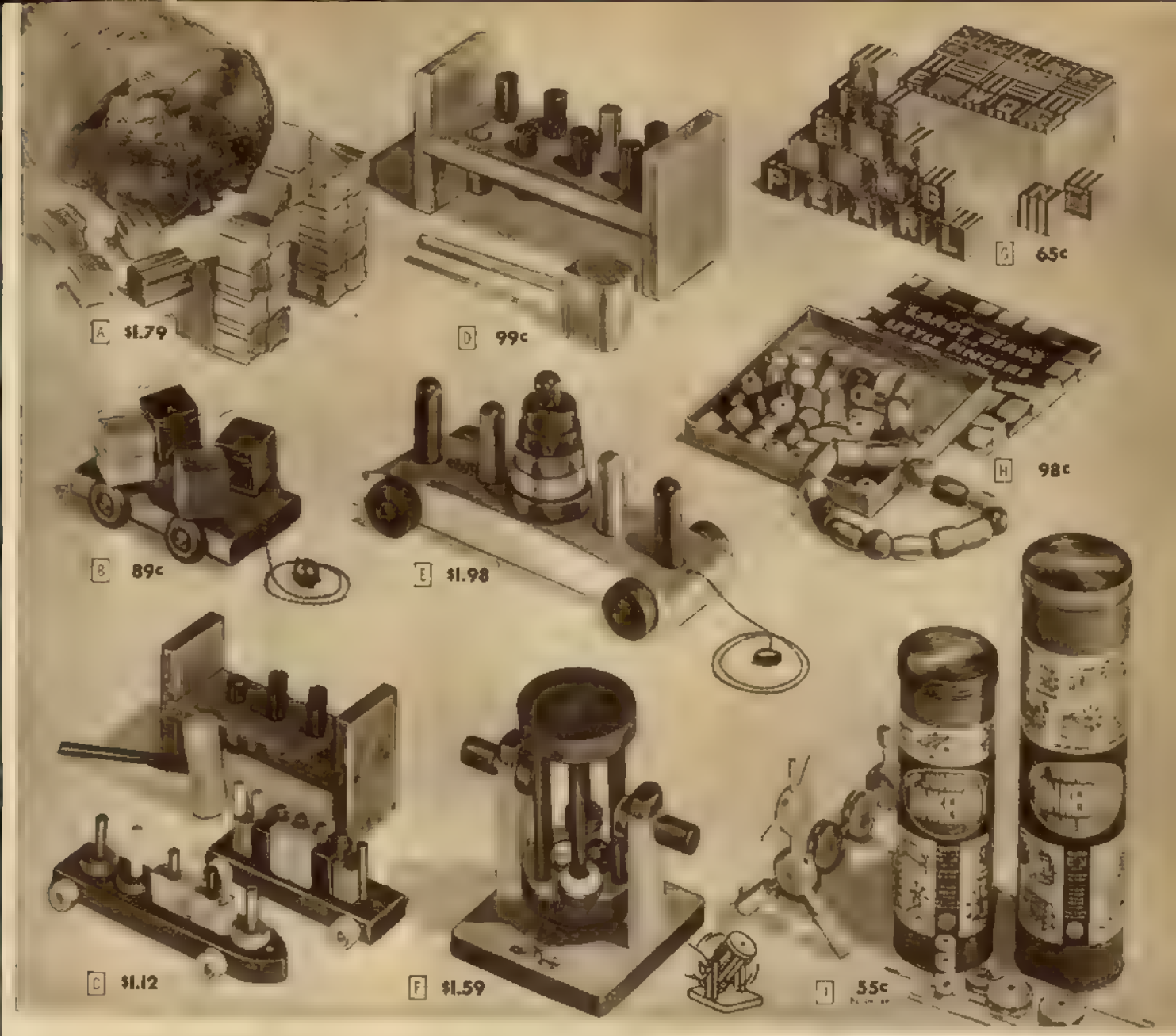
Just look at the pieces this outfit includes! It's as complete as can be, with every farming essential. Children will enjoy arranging the farm in regular workaday fashion. They'll have a wonderful time planting, cultivating, and harvesting their crops; taking care of all the animals and farm machinery.

All parts are precision die-cut from strong cardboard. To make the wing-style barn look all the more true-to-life, there is R-V-Lite transparent material to attach over the windows. Set includes 8 implements, of which combine, manure spreader, and mower have movable parts. Other implements are seeder, rake, tractor, disc harrow, and farm wagon with team of horses. Combine with movable 4-bat reel measures 11½x 4½x5¼ inches; other pieces are in proportion.

Besides all the above, there's a shed, farmhouse, silo, hen house, water well, windmill, doghouse, and 12 sections of fence. Each of the approximately 44 animals is printed on both sides and has a support so it stands alone. Instructions included.

49 N 6430—Shipping weight, 5 pounds.....72-piece set $1.99

Include toys in your Easy Terms order . for details see page 182C



Every child should have fascinating, educational Toys like these

A Lok-A-Blocks. These blocks are lots of fun . . . wonderful to stimulate a child's imagination and encourage creative play. Grooved on four sides so they lock, a feature children like. Tots can move things they have built without breaking them up. Set contains over 75 smooth, natural finish wood blocks. Easy to handle. Picture directions incl.
49 N 3621—Shipping weight, 4 lbs. . . . **$1.79**

B Whirligig Block Wagon. Fascinating! When the little wagon is pulled the four brightly colored blocks revolve. Small children love to watch them whirl 'round and 'round . . . they'll never tire of pulling the wagon. Carefully constructed of smoothly finished wood. 1½-inch blocks can be removed. Strong pullcord attached to wagon. Size, 7x3½ inches.
49 N 3636—Shipping weight, 1 lb. 8 oz. . . **89c**

C 3-in-1 Toy Set to amuse tiny tots. Assortment of three wood toys includes a hammer board, 7⅜x2¾ inches; a set of peg blocks on wheels, 6¾ in. long, and 8-inch peg boat on wheels. Excellent for pre-school children . . . entertaining, educational . . . helps develop hand and eye coordination. Well constructed; bright colors. Will last a long time.
49 N 3699—Shipping weight, 1 lb. 8 oz. **$1.12**

D Sock-It Bench. Here is a toy lively tots can bang, pound and hammer all they please and no one will say "No, no!" Let them hammer away at this Sock-it Bench . . . helps develop hand and eye control. Made of strong hardwood. Set includes eight large colored wood pegs in bench, 11¼x4¾ inches, and a sturdy wooden mallet.
49 N 3606—Shipping weight, 3 pounds. . . **99c**

E Peg and Ring Pull Toy. It's fun . . . it's educational! Five removable pegs and five graduated rings on 13-inch long platform with wheels and pull cord. Setting in the pegs and stacking rings in proper order stimulates a child's mind. Made of sturdy, smooth wood, harmless lacquer finish. Center peg, 6 in. high; 4 small pegs, 4 in. high. Ring diameter, 2 to 3 inches.
49 N 3850—Shipping weight, 2 lbs. **$1.98**

F Kiddie Chuckle. An unusual toy for small children . . . just the thing to keep them out of mischief and amused for hours on end. When the wood tumbler is turned, the glass ball and brightly colored wood rings merrily tumble and rattle about. Colorful decals on wood base, gay painted trim. Overall height, 8 inches; base measures 5¼x6¼ inches.
49 N 3816—Shipping weight, 1 lb. 12 oz. **$1.59**

G Interlocking Wood Blocks. Even very tiny tots will enjoy these 40 Halsam Hi-Lo blocks. Interlocking feature and rounded edges make building easier and play safer. Interesting pictures of various animals and large capital letters are printed on two sides . . . help children learn the alphabet. Harmless coloring. Size of cubes, 1⅝ inches.
49 N 3613—Shipping weight, 1 lb. 12 oz. **65c**

H Large Beads to string. Provide busy work for little fingers. Stringing beads is a fascinating occupation for the young ones. Box contains over 50 large wood beads covered with smooth, durable enamel. Assorted colors that appeal to the young eye . . . assorted shapes. Strong 32-inch cord has ferruled tip to make stringing easier and avoid ravelling.
49 N 4752—Shipping weight, 1 lb. 4 oz. . **98c**

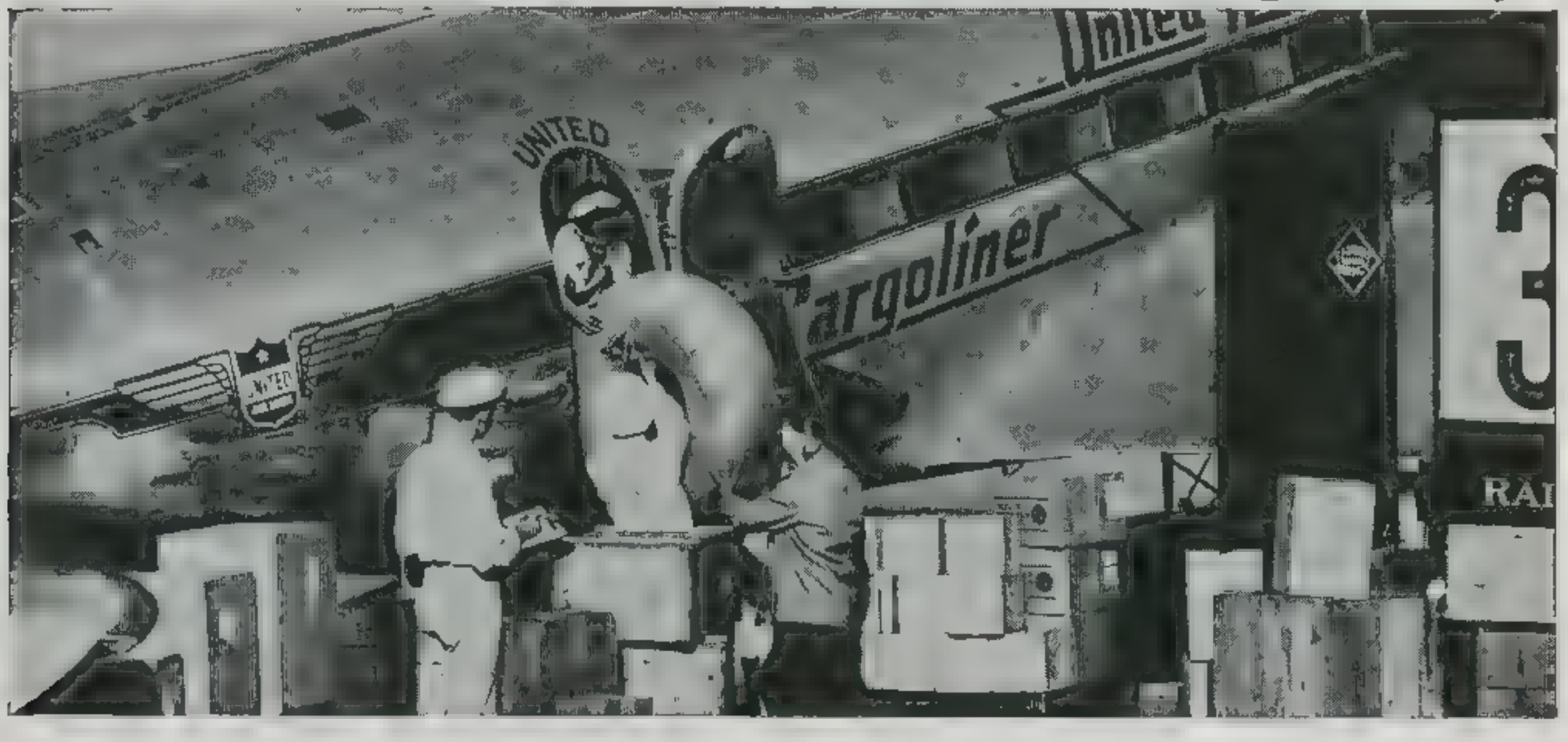
I Famous Tinker Toys. A favorite with any age. Easy-to-fit-together, slender white birch rods and spools. Cardboard windblades. No tools necessary. You can make all sorts of interesting models.
49 N 4710—Low-priced 81-piece Junior Set. Shipping weight, 14 ounces. **55c**
49 N 4711—Large 126-piece Wonder Set. Shipping weight, 1 pound 8 ounces. **$1.05**

December is a lovely month
When crimes stop and pause
And after they have looked at me
Believe in Santy Claus!

NOVEMBER

I've reason to be thankful
As November pays a call
Unless I've got my legends sorted
I've plenty on the ball!

Phillips Hails a Famous Highway



War Production flies the Main Line Airway! Shipments placed aboard United Air Lines Cargoliners in New York at the close of the business day reach Pacific Coast cities next morning.

It's The Silver Anniversary of the Main Line Airway—Flown by United Air Lines

TWENTY-FIVE years ago this month a new, immensely important U. S. highway came into being—the nation's first coast-to-coast air route, now the Main Line Airway of United Air Lines!

Chosen by the Post Office Department as the original east-west aerial highway, the New York-Cleveland-Chicago-Omaha-Salt Lake City-San Francisco route has been the scene of many of aviation's most important advances.

On this route took place the first coast-to-coast air mail service, the first scheduled night flying, the first airline use of two-way ground-to-plane radio, and United was the first airline to develop and use three-mile-a-minute twin-engined transports.

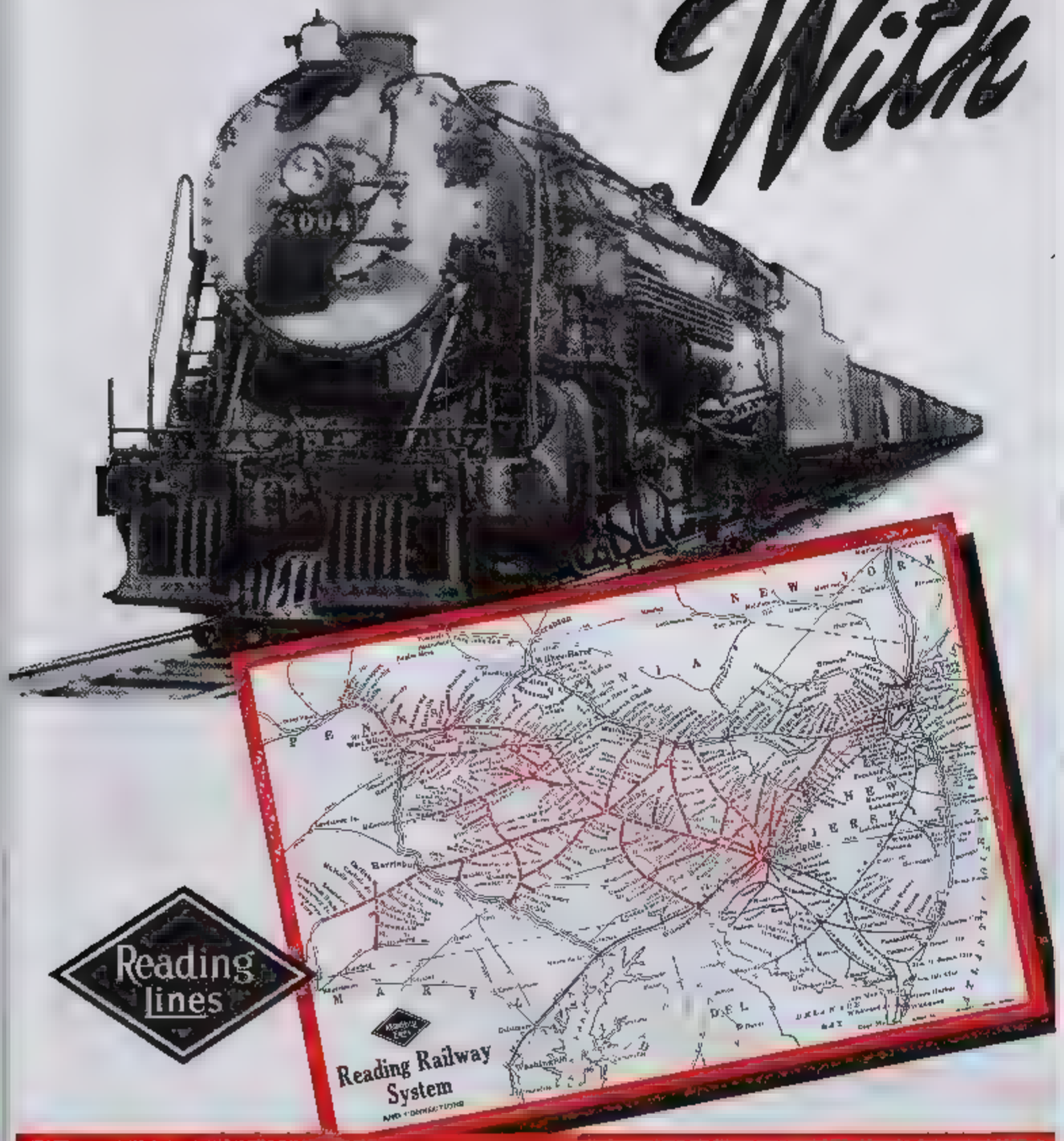
To a great Air Line, to a great Airway, and to the men who made it possible—our hats are off!

Is there any *other* reason for this birthday greeting? Sure! We're in the business of selling Aviation Gasoline. United Air Lines is a good customer of ours. We think the best tip-off on *any* product is the kind of people who buy it. We've earned United's approval and respect—we'd like a chance to earn *yours*. Write to us at—Aviation Department, Phillips Petroleum Company, Bartlesville, Oklahoma.

William Allan Patterson, president, under whose guidance United Air Lines has grown to a 6,300-mile system servicing 53 cities in 17 states, the District of Columbia and one Canadian province.

Phillips
AVIATION GASOLINE

With every Clock-Tick



295 Tons of Wartime Freight Moves One Mile on The Reading

YES, 295 ton miles for each second of the year—over nine billion ton miles in 1944! This is The Reading's service to one of America's rich industrial sections and to the whole nation at war. Such unprecedented traffic is made possible by a "heads-up" policy of modernization and improvement, new equipment, better right-of-way, and the enthusiasm of The Reading family, over 19 thousand strong.

As America's largest anthracite carrier, The Reading transported over 15½ million tons of prepared coal in 1944, yet this was only 15.6 per cent of our total tonnage. Reading rails dominate and interlace a region which produces a good share of America's war material. Reading service through the splendid cooperation of shippers and receivers helps make that production effective.

Reading Railway System

RESISTOFLEX flexible compar-tubed hose* is used extensively as fuel, lubricating, instrument and hydraulic lines by leading American and Canadian manufacturers of planes and accessories.

And here's why these vital Resistoflex hose assemblies can be depended upon where the going is tough: (1) They are immune to all types of aviation fuel, lubricating oils and hydraulic fluids, (2) Their inner diameter cannot shrink, (3) They cannot rot, swell or slough off, (4) Vibration, torsion and flexing cannot damage them.

ENGINEERING FACTS:

For complete, detailed information, send for Resistoflex Corporation's Aviation Catalog.

*The tube is the heart of the hose . . . insist upon its being made of compar

RESISTOFLEX

RESISTOFLEX CORPORATION • BELLEVILLE 9, NEW JERSEY

PHOTOS, COURTESY U. S. ARMY, U. S. NAVY AND PAN AMERICAN WORLD AIRWAYS

Service

WILL *SELL* THE PERSONAL PLANE

Question by Prospective Private Plane Owners:

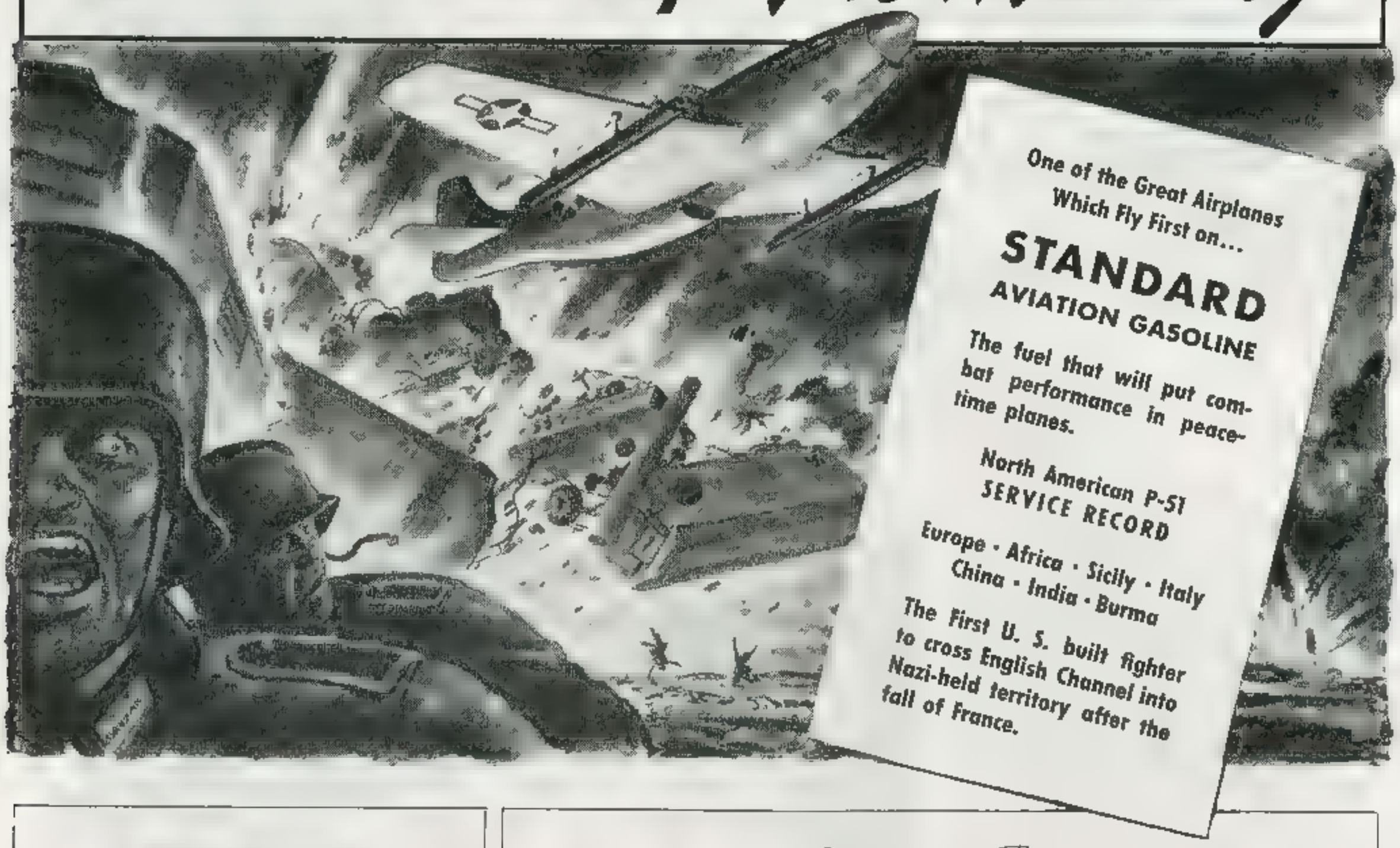
Will I be able to have my plane cared for without delay and trouble wherever I go?

Sales volume of personal planes after the small "glamor" market is depleted depends in large measure on how well that question is answered by the aviation industry.

Southeastern Air Service, Inc., is ready to say "Yes" for its territory. Through its own aircraft service bases and its system of Associate Bases, Southeastern will give Superior Service to Private Flyers.

"KEEP 'EM FLYING" WILL KEEP THEM BUYING

Stars in the sky.. *The Mustang*



One of the Great Airplanes Which Fly First on...

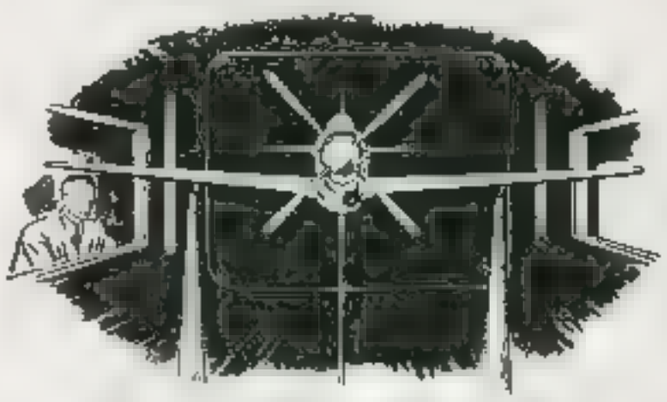
STANDARD
AVIATION GASOLINE

The fuel that will put combat performance in peacetime planes.

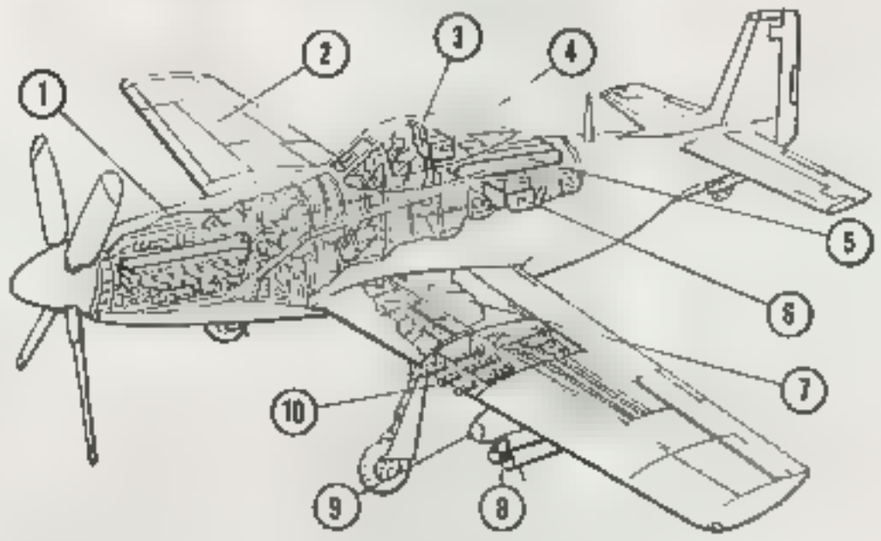
North American P-51
SERVICE RECORD

Europe · Africa · Sicily · Italy
China · India · Burma

The First U. S. built fighter to cross English Channel into Nazi-held territory after the fall of France.



It took North American only 127 days to design and build the Mustang. The Mustang won its spurs in dog fights, intruder raids, train busting. First P-51 was test flown October 26, 1940 — on Standard of California Aviation Gasoline.

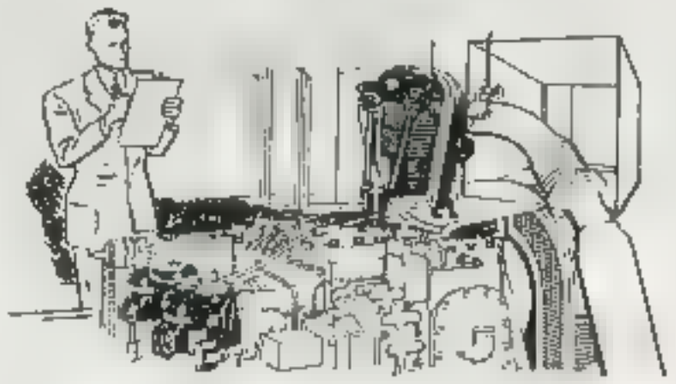


1 1520 h. p. Supercharged Engine
2 Laminar-Flow Super Speed Wing
3 Armor Plate
4 Full-Vision Cockpit Enclosure
5 Oxygen Tanks
6 Two-Way Radio
7 Self-Sealing Gas Tanks
8 Three Bazooka Tubes on Each Wing
9 1000 Pounds of Bombs Under Each Wing
10 Three 50-Cal. Machine Guns in Each Wing

Present AAF Version (diagrammed above) **is called world's fastest propeller-driven fighter at 450 m.p.h. Each Mustang comes off production line with its tank full of Standard Aviation Gasoline. North American Aviation, Inc. has used Standard Aviation Products since the commencement of their operations in California.**

With six 50-caliber machine guns, two 1000-pound bombs, six bazooka tubes, the Mustang can fight anything the enemy offers. Here is what P-51 pilot sees diving on gun emplacement.

New gasoline being tested in engine which simulates conditions of actual flight.



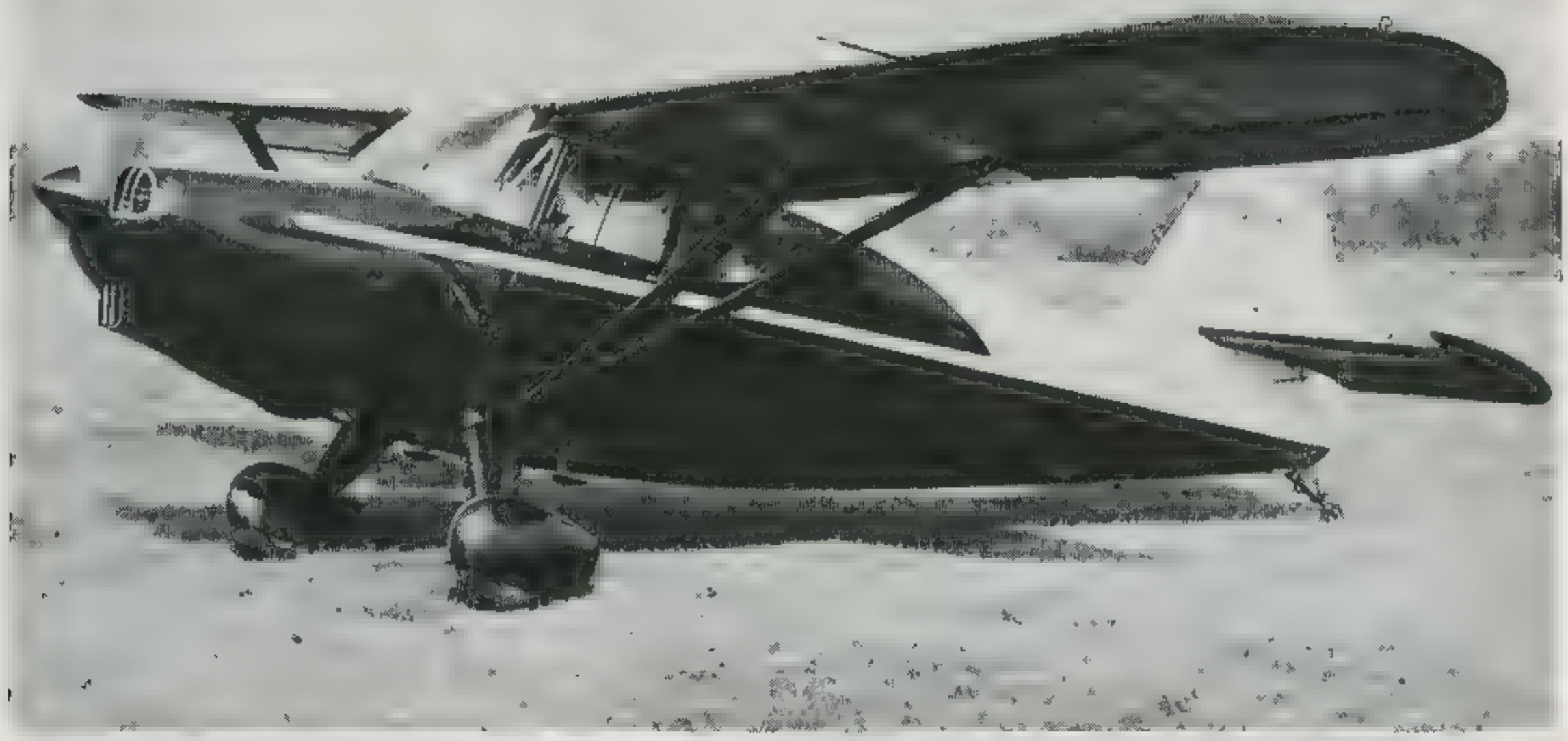
Today, in Standard of California laboratories, the gasoline that powers famous fighting aircraft is being constantly improved to bring out the best in your postwar plane . . . to make it, too — a star in the sky.

STANDARD
AVIATION PRODUCTS

THE CHOICE OF AVIATION'S LEADERS

STANDARD
OF CALIFORNIA

225 BUSH ST., SAN FRANCISCO 20, CALIF.



Now_it's the

STINSON VOYAGER 150

There's no standing still at Stinson!

Your new Stinson Voyager will take to the air with a 150-h.p., instead of a 125-h.p. motor, as originally promised. Yet, there's *no increase in list price* for this 20 per cent increase in power.

And more good news! The new Stinson Voyager 150 will soon be rolling off the production lines.

Here's a roomy, four-place ship that has everything you've always looked for. The Voyager 150 has power to spare. And its high-altitude performance (1350-ft. take-off at 8700-ft. altitude . . . and a service ceiling of 14,000 ft.) makes it a versatile plane anywhere. With its 500-mile range, its extra comfort, and low operating costs, this Stinson is a stand-out among cross-country planes.

The Voyager 150 will take you there and back in a hurry. It has a top speed of 133 m.p.h. and a cruising speed of 125 m.p.h. And even on long, cross-country trips, you'll fly comfortably.

The scientifically shaped, richly upholstered seats really let you relax . . . in the soundproofed, ventilated cabin of the Voyager 150. A cabin heater keeps you warm, no matter how cold it is outside.

In addition to the traditional Stinson stability, and proven wing-slot feature, the new Voyager 150 has a new tail design and other features to make it even more spin-resistant. And its flaps make even the shortest runways seem comfortably long.

The seven-foot landing-gear tread, steerable tail wheel, and push-button parking brakes give this Stinson extraordinary ground safety.

You'll have the assurance, too, that this plane is backed by Stinson's 20 years of experience in building quality planes, and by the vast research and manufacturing facilities of Consolidated Vultee Aircraft Corporation

Let us send you a fine illustrated brochure telling all about the Stinson Voyager 150. Write Stinson Division, Consolidated Vultee Aircraft Corporation, Wayne, Michigan.

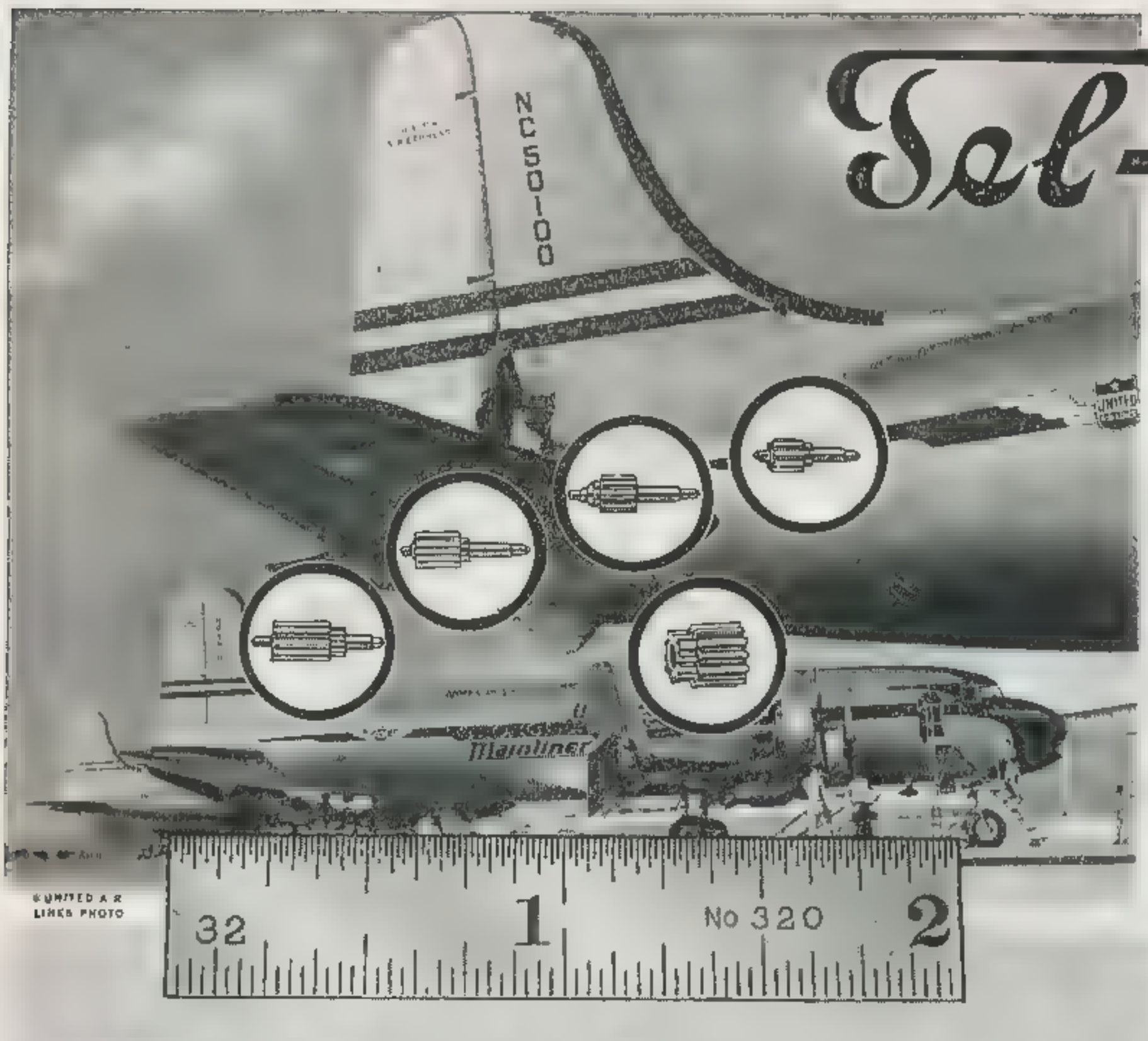
Stinson

. . . EASY TO BUY, EASY TO FLY

Stinson Division, Consolidated Vultee Aircraft Corporation, Wayne, Mich.

Sel-air

"MEANS ACCURACY"



ANOTHER TEL-AIR PART

Small Tel-Air gears showing comparative size.

●

RULE shows how small these little pinions are—yet tiny gears like these have a vital part in the success of a giant machine's operation.

THE BIG JOB *of the* TINY GEAR

ABSOLUTELY UNIFORM PRECISION, tolerance, and concentricity in every machining and finishing operation these are essential factors, the perfection of which spells Tel-air ACCURACY.

Bomb Fuzes, in which the pinions illustrated are used, and hundreds of other intricate component parts bear witness to the dependability of Tel-air precision engineering.

Right now ALL Tel-air production is devoted to the final push to end the war as soon as possible.

If you have any product using tiny mechanisms which must operate with unfailing precision and accuracy—we can make them to your complete satisfaction. We have an enviable record for deliveries on schedule.

BUY MORE WAR BONDS *Now!*

* Planes illustrated are the 4-engine type which United has ordered for post-war service.

In the Air it's *Sel-air*

The TELEOPTIC Company
1251 MOUND AVENUE • RACINE, WISCONSIN

On the Highway it's *Teleoptic*

PHOTO BY COURTESY KELLETT AIRCRAFT CORP.

Twenty Timken "Aircraft" Bearings equip the new Kellett XR-8 Helicopter—made for the U. S. Army Air Forces—at twenty vital points of its main drive and wheels.

Part of a series developed to meet the need of aircraft engineers for an anti-friction bearing with lighter weight and compact design, Timken "Aircraft" Bearings also assure maximum radial and thrust load-carrying capacity . . . smoothness of operation . . . economical maintenance . . . and ease of operation . . . as well as power conservation and endurance.

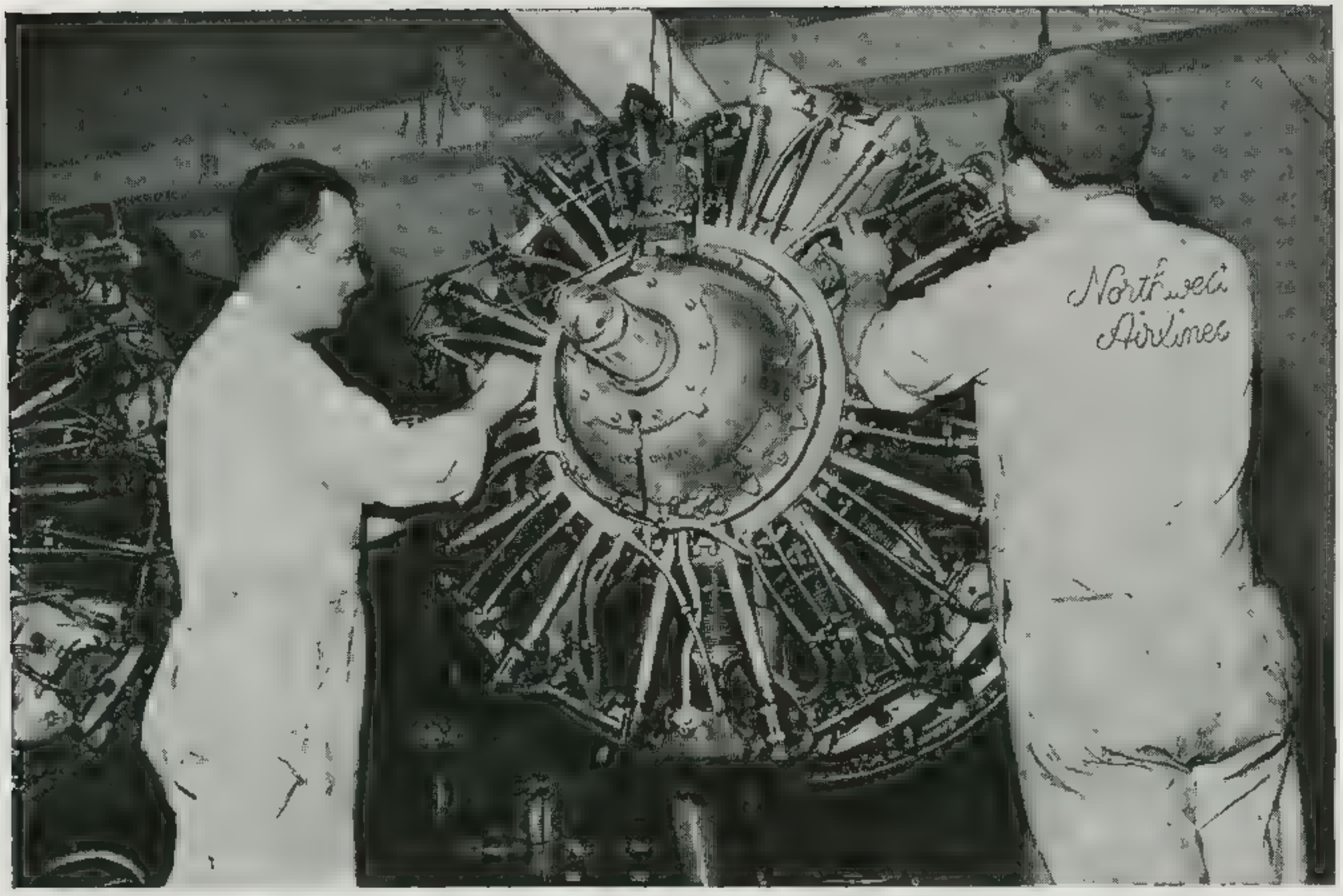
If the many matchless qualities of Timken Bearing design for aircraft applications can help, consult us. We'll be glad to make recommendations. The Timken Roller Bearing Company, Canton 6, Ohio.

TIMKEN

TRADE-MARK REG U S PAT OFF

TAPERED ROLLER BEARINGS

The "TIMKEN" Trade-mark is a good thing to look for . . . a protection to find.



MECHANIC: *"This shielding certainly stands up, Chief."*

CHIEF MECHANIC: *"And how, Bob! It's Aerocon Flexible Conduit."*

MAINTENANCE MEN know what they are talking about when they acclaim Aerocon. Service records of installation after installation testify to the remarkable durability of this superior flexible shielding conduit.

Take the example of Northwest Airlines, which becomes America's fourth great transcontinental airline with the extension of service to Detroit and New York, beginning June 1. Here, spark plug leads with Aerocon shielding completed *2500 hours of successful engine operation*—passed rigid testing—and were returned for additional running. Many other records prove the extraordinary ability of Aerocon to withstand vibration and remain pressure-tight for long periods of service.

Aerocon Type 154 was first developed to provide thoroughly dependable shielding to blank out radio interference from high-tension aircraft ignition systems. Its efficiency and durability have been continually improved—and today this long-lived flexible conduit is widely used by prominent manufacturers to dampen the interference of *all* electrical wiring—high or low tension.

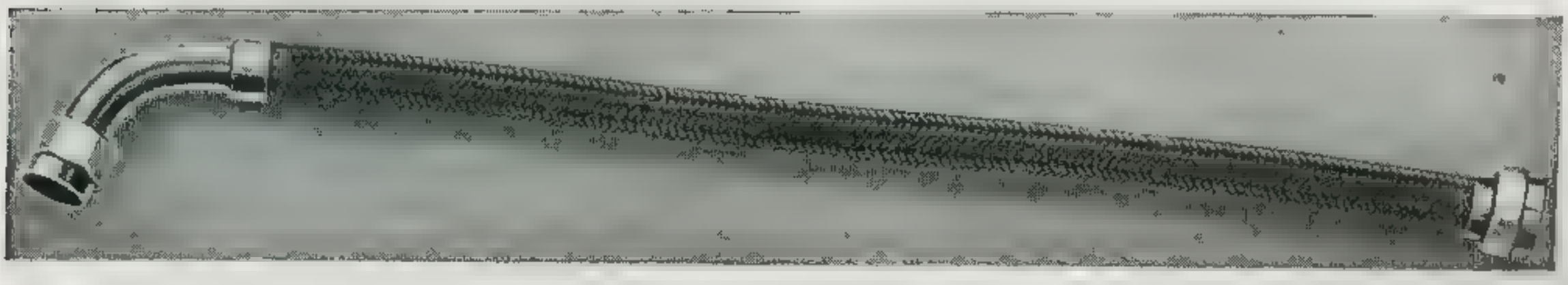
Titeflex Aerocon Type 154, or its equivalent, is now specified by both the Army and the Navy for use wherever electrical connections on airplane or engine must be radio-shielded. It is available to the aircraft industry in all diameters for which conduit is required. Inquiries will receive the prompt attention of our engineering staff.

TITEFLEX, INC.
508 Frelinghuysen Ave., Newark 5, N.J.

Titeflex

REG. U. S. PAT. OFF.

Illustrated below is one of the Titeflex ignition leads which completed 2500 hours of operation on a Northwest Airline plane. It is a detachable lead used as part of a pressurized harness.



Every Office Needs a Salvage Chief

"appoint yours today!"

Uselessly stored in many American offices today are tons of *war material!* Vitally needed paper — the raw stuff of blood plasma boxes, shell cases, supply parachutes — *V paper!* It takes many forms . . . dead files, old correspondence, records.

It's easy to put off getting that paper together, bundling it and turning it in. But you should do it for the war effort and for your own sake. Only in this way can we help avoid further civilian paper allotment cuts.

That's why every office should appoint *one person* to act as Salvage Chief. He — or she — can organize the effort, and arrange for regular Paper Salvage days. And the Salvage Chief can remind everyone to adopt conservation measures — to use less paper — as little as possible.

Many organizations which sell their waste paper turn part of the funds over to buy little extras for wounded veterans, or to support some other worthy community project. Thus you have a chance to make your paper serve *twice.*

Get your office paper salvage program rolling *now!*

DOUBLE V PROGRAM

SAVE WASTE PAPER

V TO SPEED VICTORY
V TO AID VETERANS
OR LOCAL PROJECTS

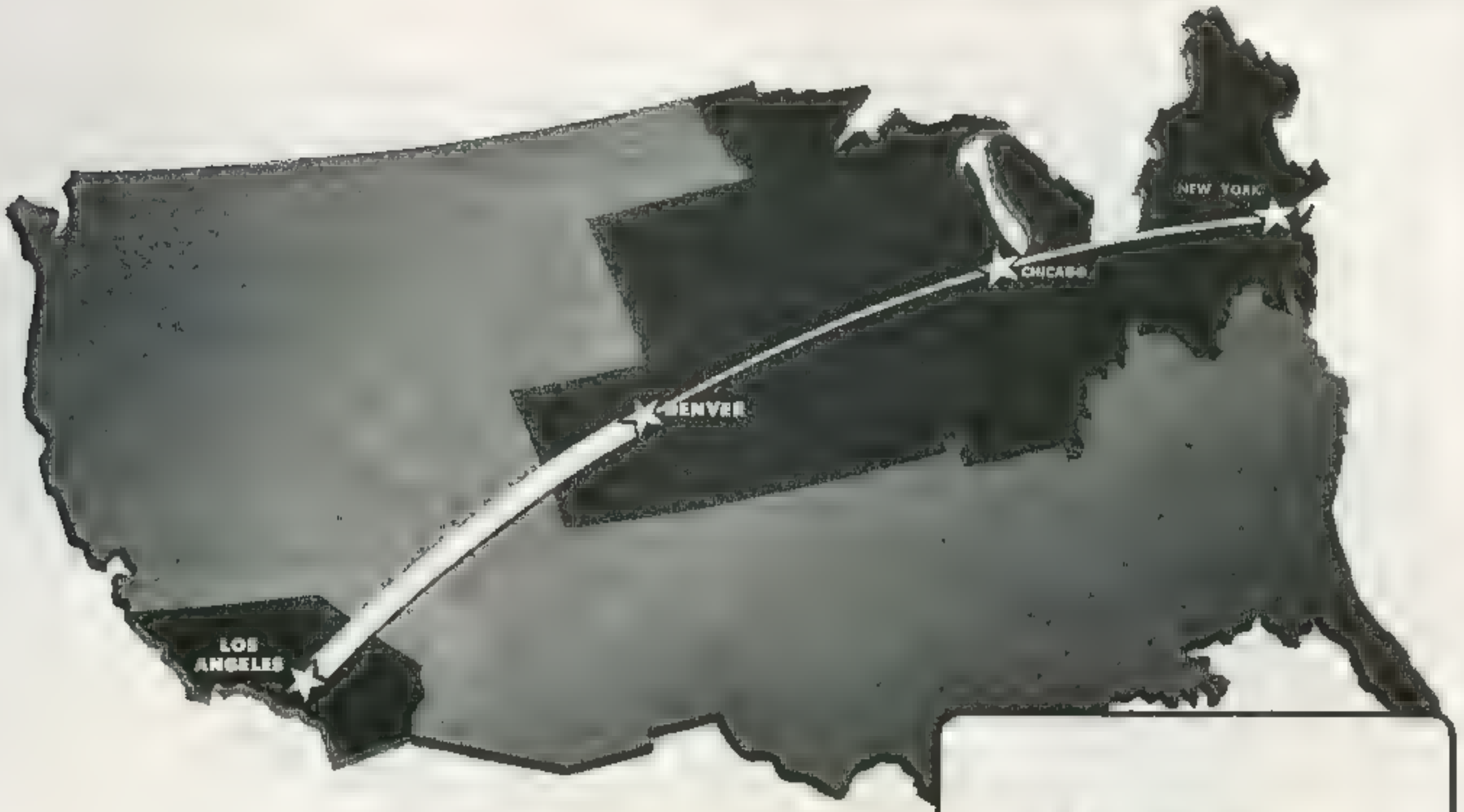
Separate and tie in bundles: 1. Wastebasket scraps. 2. Corrugated boxes, brown paper and bags. 3. Magazines and books. 4. Newspapers.

This advertisement prepared by the War Advertising Council in cooperation with the War Production Board and the Office of War Information. Space contributed to Double V Waste Paper Program by this publication.

WESTERN AIR LINES' "CUT-OFF" ROUTE

THE *"Natural"* AIRWAY...

THAT SAVES TIME FOR 85 MILLION PEOPLE!

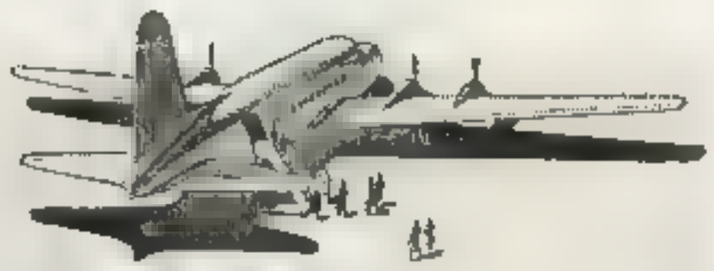


WESTERN AIR LINES' "cut-off" route between Denver and Los Angeles — to be opened in the near future — is a natural airway that will bring faster passenger, air mail, express and cargo service to 85 million people.

The areas which will directly benefit — as shown on the map — encompass 64 per cent of the people of the country... most of the heavy industrial and agricultural production... and practically all the big population centers. Western Air's "cut-off" is a natural because it completes the only airway that closely follows the natural global — "great circle" — route coast-to-coast. It cuts flying time between Denver and Los Angeles by 2 hours, reduces New York-Los Angeles air mileage to 2543, shortest of any airway.

Western Air Lines was first to recognize the importance of the "cut-off," dates its development from 1936 when the route was mapped. Inauguration of service will culminate a long list of achievements which the company has recorded during its 19 years of pioneering air transportation for the West.

General traffic office: 510 West Sixth Street, Los Angeles 14



Air travelers will view the scenic splendor of Western Air's Denver-Los Angeles "cut-off" route from big DC-6 Douglas luxury airliners. Costing a half-million dollars each, these giant transports will carry 50 daytime passengers at a cruising speed of 300 miles per hour . . . will incorporate every postwar accommodation and safety device.

When Western Air launches cargo service over the Denver-Los Angeles "cut-off" in early summer, shipping of fruit, vegetables, and other table delicacies to Eastern markets will be speeded up . . . manufactured items will move equally fast from Eastern production centers to the West Coast-

WESTERN AIR LINES
AMERICA'S PIONEER AIRLINE

Power plant Research **UP** *where it Counts*

To provide adequate power plant data for plane manufacturers and operators, Wright Aeronautical tests its Cyclone engines under all flight conditions. Special instrument ships such as this flying laboratory enable Wright Aeronautical to gain experimental data today under conditions duplicating those of tomorrow's regular flights.

This Test Equipment Gives Detailed Data

- Test coordinators: pilot and co-pilot.
- Volume meter measures fuel consumption at any given throttle and mixture setting.
- Flight observer at temperature recorder. Instrument records one temperature reading every two seconds.
- Test lines to Wright Cyclone (cowling cutaway to show installation).
- Radio-equipment bay (cutaway to show interior).
- Flight observer interprets oscilloscope pattern of cathode ray detonation detector.
- Panel of 35 instruments, including 6 pressure gauges and 6 valves which can be varied to give 36 additional readings in inches of H_2O.
- Flood lights on instrument panel.
- Photo Panel Observer. Automatic 35 mm. camera takes simultaneous reading of 35 instruments.
- Low-pressure oxygen system.

WRIGHT

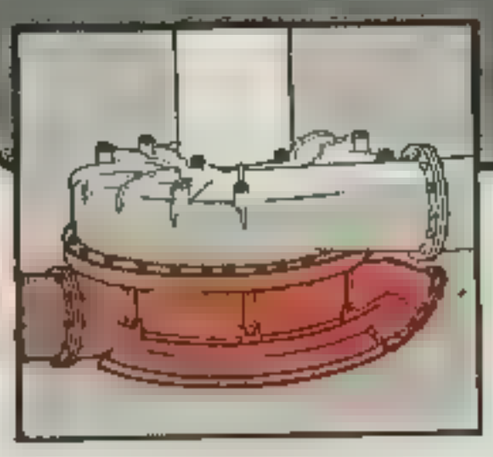
AIRCRAFT ENGINES

DIVISION OF
CURTISS WRIGHT
FIRST IN FLIGHT

Wright Aeronautical Corporation • Paterson, New Jersey, U. S. A.

HOW WASTE MAKES HASTE

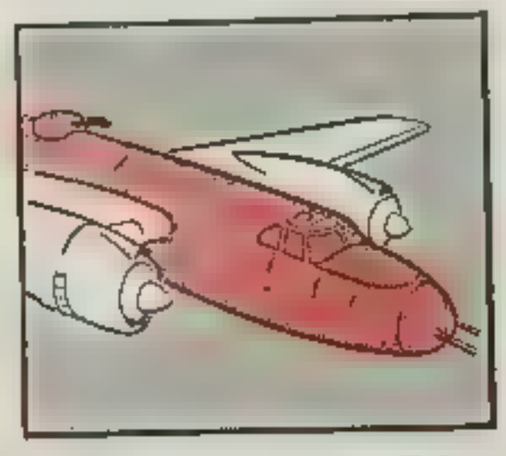
WHEN RYAN MANIFOLD-ENGINEERING IS EMPLOYED DURING THE AIRPLANE-DESIGN-STAGE



TURBOSUPERCHARGER—Fast-flowing exhaust gases drive a bucket wheel turbine at 30,000 r.p.m. which is connected to an air compressor that packs huge quantities of compressed air into the engine's windpipe at high altitude.

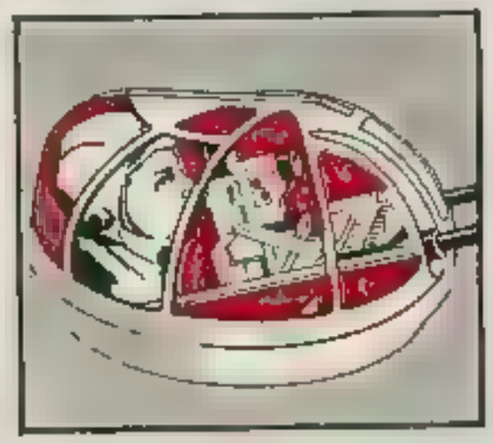
ANTI-ICING—Exhaust heat is piped to critical wing and tail surfaces to prevent ice formation. This method, which eliminates weight of heaters and fuel, prevents ice accumulation rather than removing it.

CARBURETOR HEATING—Warm air from the exhaust system prevents ice from forming on the carburetor air screens, choking off the air supply to the engine.



CABIN HEATING—The efficiency and comfort of the passengers and crew are maintained at freezing altitudes by warm air which is heated by the energy diverted from the engine exhaust.

JET PROPULSION—As much as 28 extra miles per hour in top speed is added to plane performance by Ryan designed exhaust stacks which step up the velocity of escaping gases and impart added thrust.



GUN HEATING—Instant operation of vital gun parts at all temperatures is guaranteed by a flow of warm air from the exhaust system which maintains gun-oil viscosity.

For Extra Speed and Efficiency...

Ryan Engineers Help Put Waste Exhaust Heat and Gas to Work in These 6-Ways . . . Thus Eliminating Heavy, Costly Extra Equipment for Performing Vital Plane Functions.

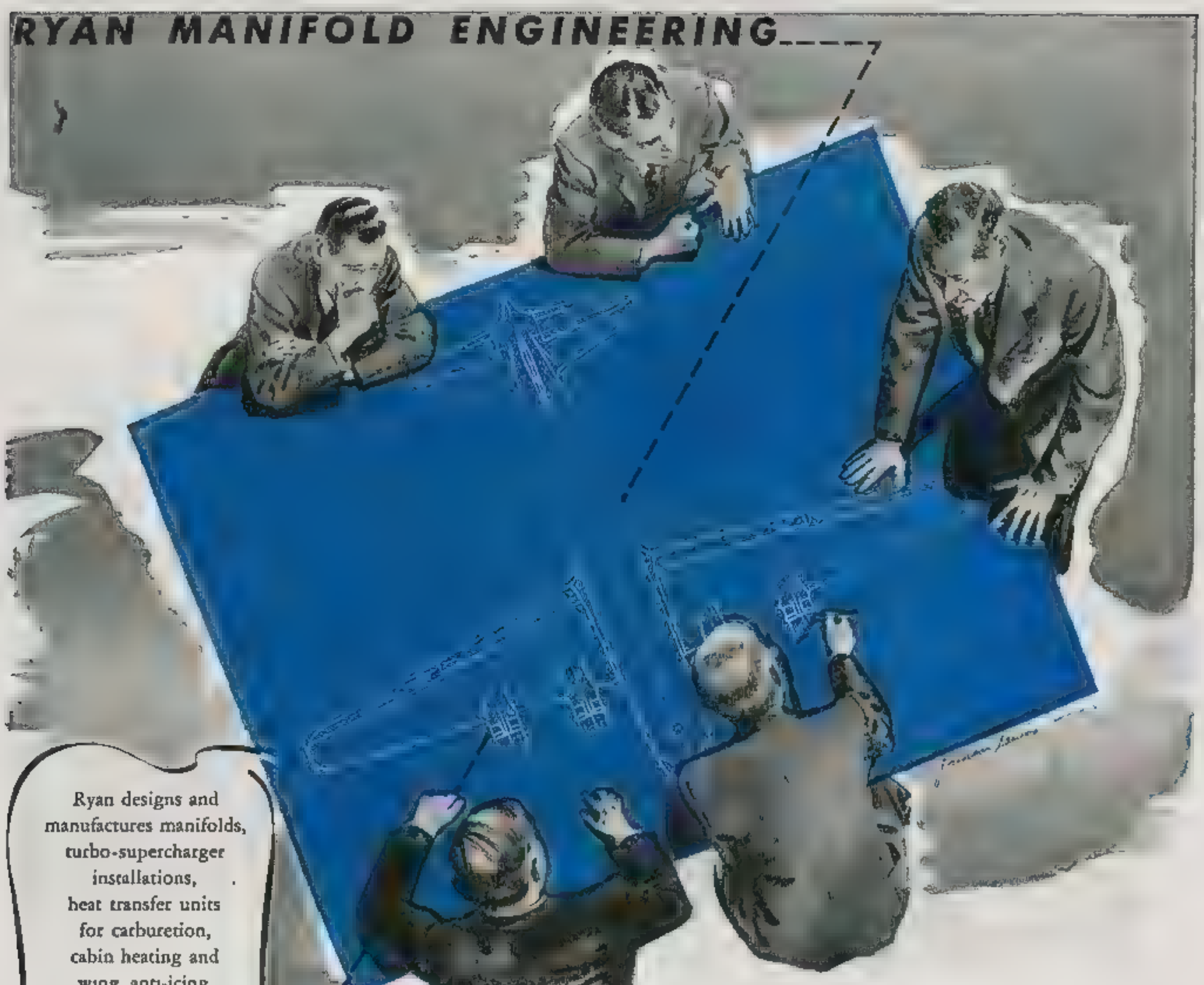
The Douglas C-54 Skymaster and C-47 Skytrain, Grumman F6F Hellcat and F7F Tiger Cat, Northrop P-61 Black Widow, Curtiss-Wright C-46 Commando, Consolidated-Vultee TBY-2 Sea Wolf and Goodyear K Blimp are among today's distinguished aircraft using Ryan Manifold equipment. To take fullest advantage of Ryan's vast experience with these and many other secretly-developed planes which cannot as yet be revealed, call in Ryan Engineering Service during the design-stage of *your* plane.

RYAN *Manifolds*

1922-1945

RYAN AERONAUTICAL COMPANY, SAN DIEGO
MEMBER, AIRCRAFT WAR PRODUCTION COUNCIL, INC.

DESIGNERS AND BUILDERS OF
NAVY FIGHTING PLANES AND EXHAUST MANIFOLD SYSTEMS



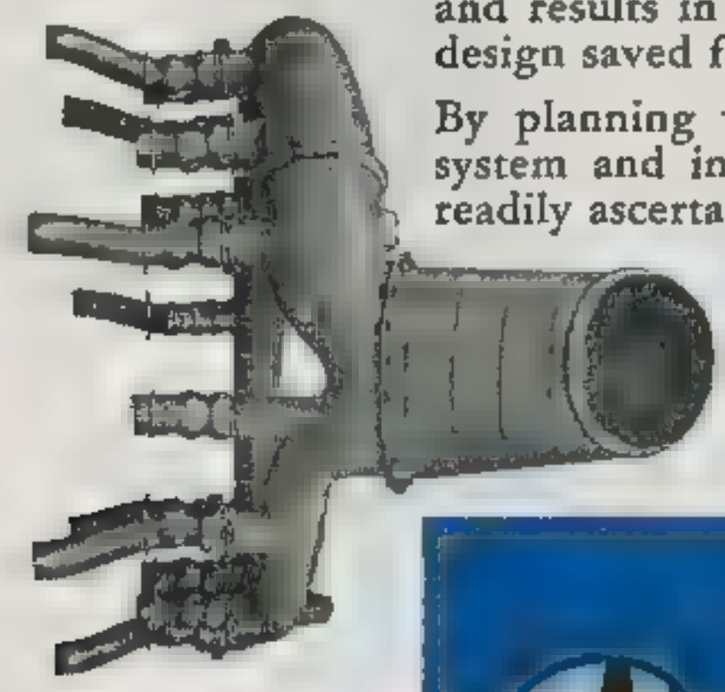
Ryan designs and manufactures manifolds, turbo-supercharger installations, heat transfer units for carburetion, cabin heating and wing anti-icing, flame dampening, and other specialized exhaust system applications.

IN THE DESIGN STAGE

means lower weight, better performance

To plan the exhaust manifold system when the original design for the airplane is being made saves costly engineering time, brings reduction in weight, and results in better performance. In a typical instance a Ryan manifold design saved forty-eight pounds in the weight of a military transport plane.

By planning with Ryan during the design stage, the type of manifold system and installation best suited to your specific requirements can be readily ascertained.



Whether planning to use Ryan ball and socket type or slip-joint type manifolds, let Ryan work with you in the *design* stage. You will obtain a superior product and maximum performance, and, in wartime, *lower weight;* in peacetime, *bigger payload.*

RYAN

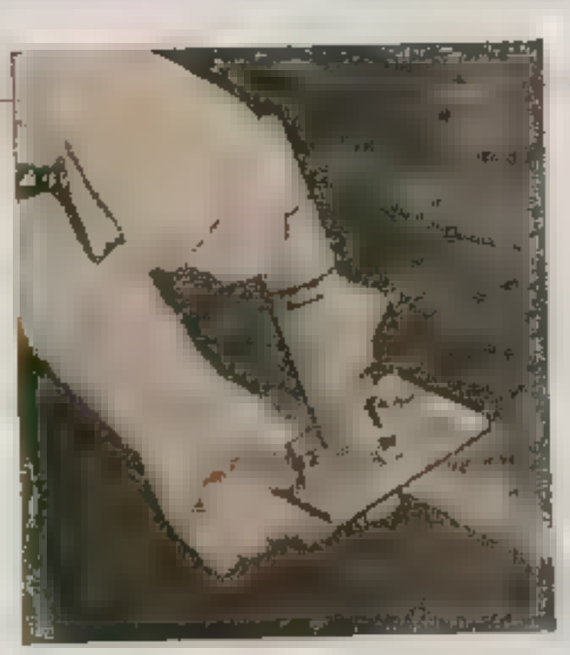
RELY ON RYAN TO BUILD WELL 1922-1945

Ryan Aeronautical Company, San Diego — Member, Aircraft War Production Council, Inc.

DESIGNERS AND BUILDERS OF NAVY FIGHTING PLANES AND EXHAUST MANIFOLD SYSTEMS

266 *Extra Ideas*

RYAN'S Production and Engineering Staffs include many outstanding names of the aviation industry. But no one MAN *... nor one* GROUP *... has a monopoly on ideas. That's why the Ryan Aeronautical Company sponsors Shop Suggestion and Patent Development Plans, which offer valuable incentives to* ALL *employees ... for turning in suggestions for improvements. Often, these suggestions turn out to be the sort which occur only to workers in their on-the-job, everyday experience. To date, Ryan employees have submitted 1065 ideas, from which have been obtained 266 valuable contributions to aircraft production. 266 reasons why Ryan production methods mean constantly improved military planes today ... safer, lower cost air transportation tomorrow.*



NEW TOOL SAVES MAN-HOURS

When the final section of metal skin is put down on a wing, there remains an overlap on the leading edge which must be trimmed back. The old method for doing this involved shearing off and filing the excess metal by hand. This was slow and produced an uneven edge. Glen L. Humphrey of Ryan's Final Assembly Department suggested mounting a motor-driven vixen file in a vertical position on a guide table, and using the edge of the spar as a guide. This idea not only stepped-up production by saving many man-hours, but produced a cleaner, more uniform trim.

— Shop Suggestion No. 433

NEW BRAKE-SHOE ELIMINATES BREAKDOWNS

Constant expanding and contracting of the circular brake-shoe on a Tannewitz Band Saw causes it to crystallize and break — frequently putting the band saw out of operation. Delmar Conde of Ryan's Mechanical Maintenance Department suggested making a brake-shoe in two separate halves, held together with helical springs, so that the shoe can be expanded without straining the metal. Result: costly, time-taking breakdowns caused by breaking shoes have been eliminated, and the production output of this important tool has been increased.

— Shop Suggestion No. 469

VULCANIZING DOUBLES LIFE OF SCARCE RUBBER

The rubber pad that covers the surface of a hydro-press ram is 6 inches thick and weighs several hundred pounds. Formerly, after both sides of the rubber had become badly chewed from forming metal parts, it was necessary to replace the pad with a new one. R. W. Booth, Sr., of Ryan's Drop Hammer Department, noting that the inner two-thirds of the pad was practically undamaged, suggested grinding off the outside inch of worn rubber from each side, and then vulcanizing an inch-thick layer of new rubber on each side. Result: pad's life is doubled.

— Shop Suggestion No. 1470

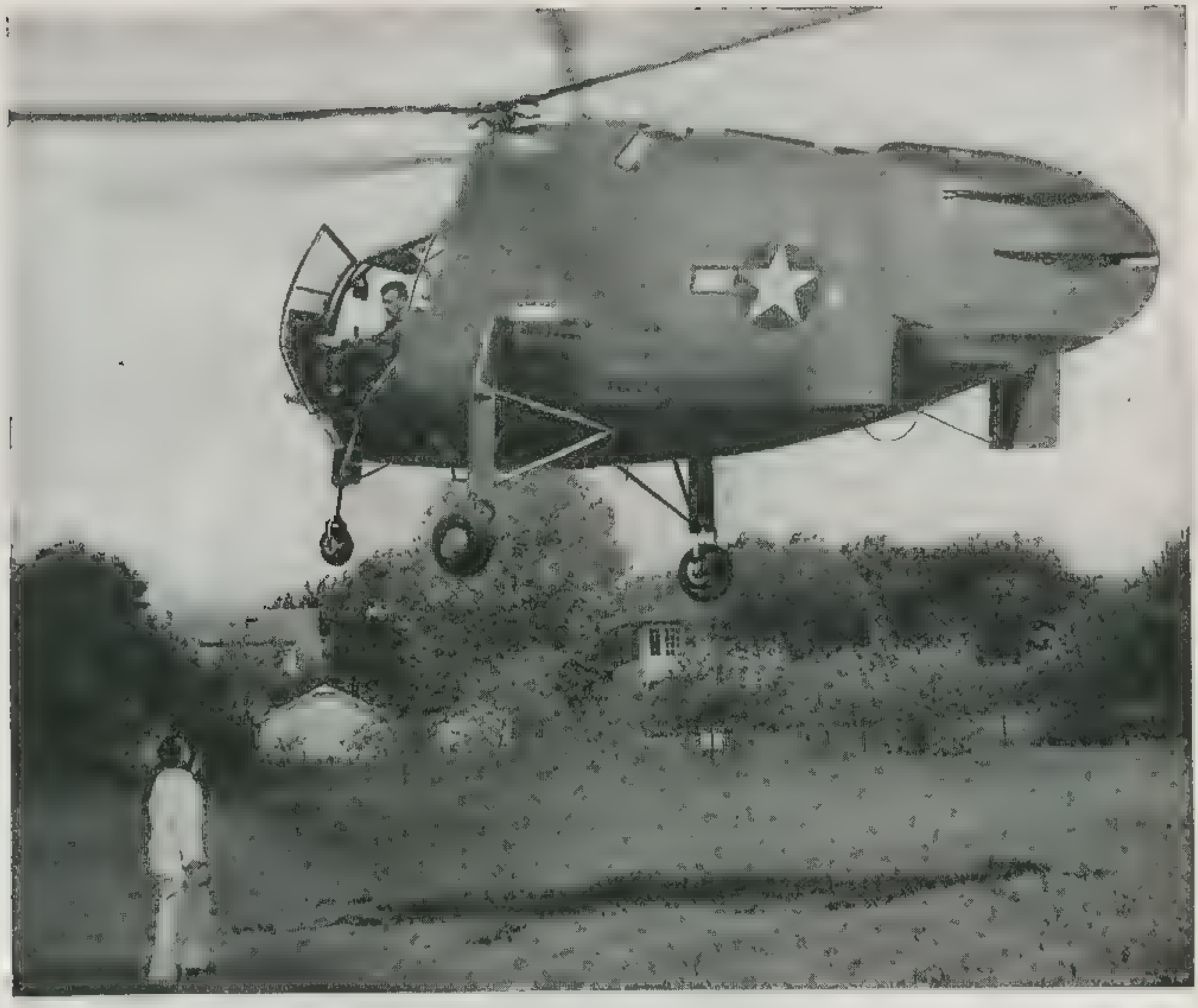
RELY ON RYAN
TO BUILD WELL

1922-1945

RYAN

Ryan Aeronautical Company, San Diego — Member, Aircraft War Production Council, Inc.

DESIGNERS AND BUILDERS OF NAVY FIGHTING PLANES AND EXHAUST MANIFOLD SYSTEMS



ALL IN THE DAY'S WORK

A helicopter can easily hover low enough for pilot and passengers to talk with people on the ground nearby. The Kellett XR-8 helicopter, shown above, "stood still in the air" by the hour, at only *one foot altitude*, during its test period. When all was ready, restraining cables were loosed and its cross-country flying career began

The XR-8 can fly forward, backward or sideways. It can rise or descend vertically, permitting take-offs and landings in any space large enough for safe clearance of its own blades.

Kellett has been active in the design of rotary wing aircraft—helicopters and autogiros—for over 16 years. More advanced models than the XR-8 are on Kellett drawingboards and in Kellett workshops today.

The final word in helicopter design will not be written for some time to come. Many engineering problems must be solved before helicopters are brought into practical daily use. Progress already achieved, however, more than justifies the man-hours that must still be spent by Kellett and other organizations active in this field. Their objective is to make helicopters available for exacting travel and transport jobs, in areas and under conditions where no other air, land or water craft can operate.

Kellett Aircraft Corp., Upper Darby (Philadelphia), Pennsylvania.

KELLETT

CROWD MAGNET

Philadelphia Evening Bulletin Photo

Men and women stop to marvel at a helicopter. There is something miraculous about a machine that hangs or moves in the sky without wings or propeller. And flies forward, sideways or backward—hovers in one spot—rises or descends vertically, linking air travel with the ground, to make flying an easy step to anywhere.

The helicopter's high crowd appeal was shown (above) a few months ago in a demonstration of the Kellett XR-8 military model at Fairmount Park, Philadelphia, under sponsorship of the U. S. Army Air Forces.

With the ease of a hummingbird, the XR-8 flew in, high over the crowd, and settled to rest in a space only 100 feet square. Then the helicopter soared straight up, backed, swung from side to side like a pendulum, whirled, hovered. Finally it sped forward, at a faster clip than a motor car let loose on an express highway, in complete mastery of speed, height and direction.

Just what the public's keen interest in helicopters will mean in future industrial and commercial uses for this unique type of machine is more than we at Kellett Aircraft can forecast. As the oldest American designers and producers of rotary-winged craft, we consider one of the helicopter's most valuable features something we did *not* design or make—its inherent "crowd appeal," even to a nation which accepts modern streamlined trains and 400 mile-an-hour airplanes without a second glance.

Operating details, including cost and payload, may postpone the widest practical application of the helicopter. However, specialized money-making applications seem close at hand. Kellett Aircraft and other important organizations in the helicopter field are devoting time, money and experience to hasten the day when these craft will meet the expectations of their most loyal boosters — the American public. Kellett Aircraft Corporation, Upper Darby, Pa.

KELLETT HELICOPTERS

KELLETT 6 STEP PLAN ENABLES MANUFACTURERS TO...

• Cut Design and Production Costs
• Improve Product Quality
• Speed and Expand Output

More than $30,000,000 worth of metal products have been produced in Kellett plants since 1940, largely for leading American manufacturing organizations for which we are subcontractors. These operations developed the unique facilities now available to other manufacturers at Kellett, for the solution of any type of technical problem from the design of a marketable product to its production and delivery in quantity.

Any or all of these 6 basic steps in the Kellett Plan are provided *in any desired combination* for production on prime or sub-contract—

1 Engineering Design, under a skilled staff of practical engineers.

2 Tool Design and Manufacture, with ample facilities available.

3 Photographic Reproduction for loft-template or direct manufacturing application.

4 Experimental Manufacture of single-item or pilot models in metal or wood.

5 Engineering Testing through mechanical and chemical laboratory evaluation.

And finally, and most important—

6 *Metal and Wood Manufacture, specializing in sheet metal and welded steel assemblies.*

Not least among the advantages of the Kellett Plan are the economies it assures in design, production and capital expense, through the services of a highly skilled, outside technical and working force. The Kellett staff operates under experienced supervision. Its modern plants are specifically equipped to handle complex engineering and quantity production jobs in metal, wood and other materials.

For detailed information, write to Kellett Aircraft Corporation, Department ANSC-2, Upper Darby (Philadelphia), Pa. An outline of the general nature of your present or postwar design or production problem would enable us to set forth the possible ways in which Kellett may prove helpful in solving it.

KELLETT

SAVE TIME...REDUCE COSTS
by
THIS 6-STEP MANUFACTURING PLAN

When you call Kellett into consultation on your present or postwar design and production program, you have the choice of any or all of these 6 services, in any combination your job requires:

1

Engineering Design, by a skilled staff of practical engineers.

2

Tool Design and Manufacture, with ample facilities available.

3

Photographic Reproduction for loft-template or direct manufacturing application.

4

Experimental Manufacture of single-item or pilot models in metal or wood.

5

Engineering Testing through mechanical and chemical laboratory evaluation.

6

And most important of all—

Metal and Wood Manufacture, specializing in sheet metal and welded steel assemblies.

AND when you retain Kellett to work with you through some or all of those 6 steps, it is as if you had added an entirely new, thoroughly-trained, highly-specialized staff, and Kellett's modern plants, laboratories and testing equipment, to your own organization—*without a penny's increase in your capital investment.*

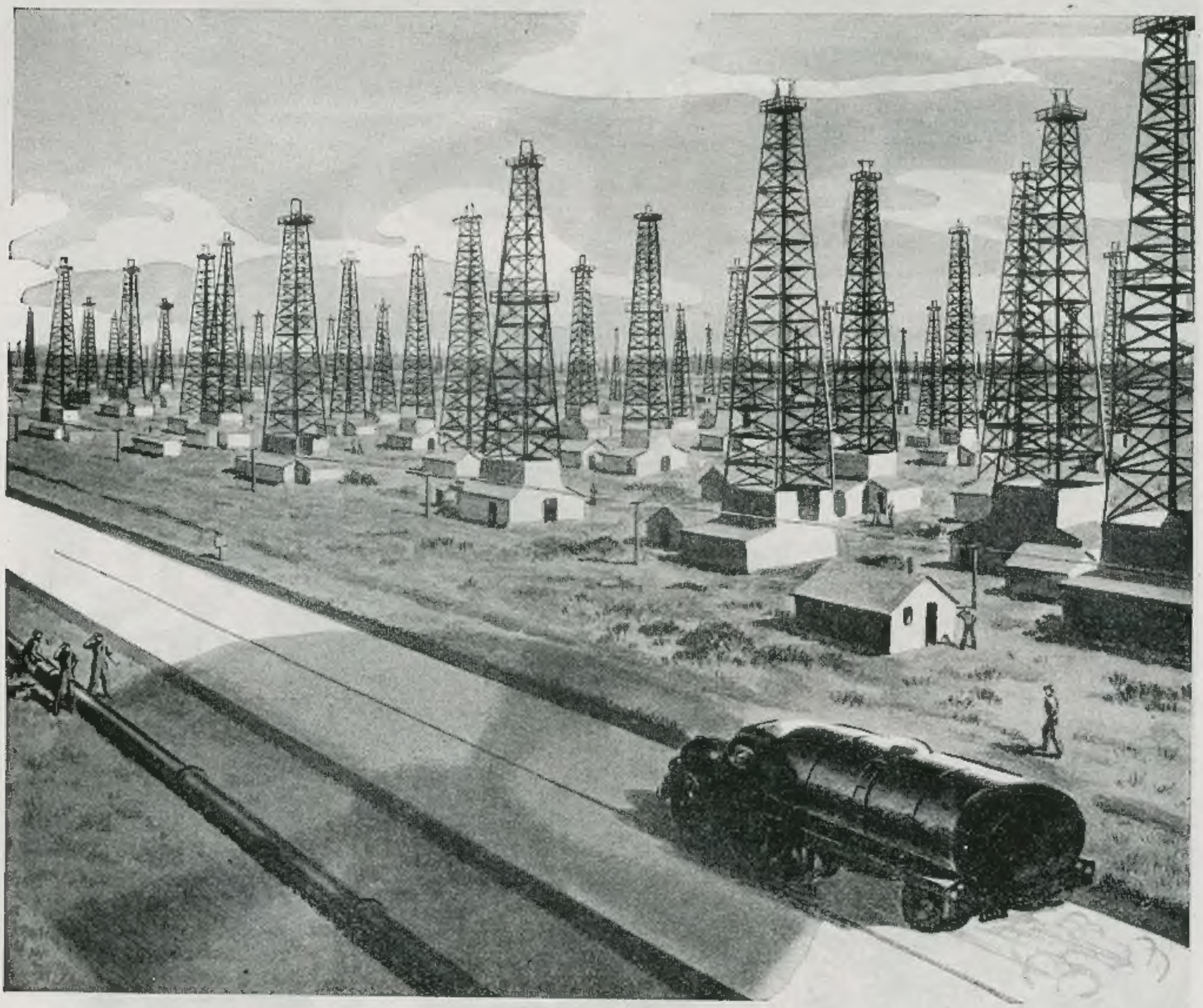
With 16 years of successful experience in the exacting field of autogiro and helicopter design, and 4 years of quantity production of $30,000,000 worth of metal products on prime and sub-contract, Kellett is well prepared to cooperate with you. These 6 steps may enable you to improve product and tool design—speed up production and to simplify reproduction operations — and assure the mass manufacture of simple or complex products developed for industrial or consumer markets.

A product of Kellett design, engineering and production—the XR-8 U.S. Army helicopter.

If you will simply write us to outline your design or production problems, we shall be glad to advise you specifically as to the ways in which Kellett may prove helpful in solving them. Write to Kellett Aircraft Corporation, Upper Darby, Pa.

KELLETT—
SUBCONTRACTOR

★ NUMBER 13 IN A SERIES OF MESSAGES BY KELLETT AIRCRAFT CORPORATION ★



"COMING EVENTS CAST THEIR SHADOWS . . ."

Over busy cities . . . industrial scenes . . . rolling farm country . . . wild, wooded regions, the shadows of rotary wings will be familiar sights . . . as helicopters take their place in future air transportation. Today, details of helicopter advances in design and in performance are not available to the public . . . but the progress made during the war, under Government sponsorship, promises a practical, useful type of aircraft with special flying abilities, freeing it from airport limitations. Kellett's experienced engineers and production organization look forward confidently to the time when the helicopter will serve alongside conventional aircraft, in the air-minded world of tomorrow.

• • •

SEND FOR INTERESTING BOOKLET

Are there questions in your mind about what the helicopter can do, its capacity, cost or speed? Send for "Answering Some Helicopter Questions." Kellett Aircraft Corporation, Dept. AN, Upper Darby (Philadelphia), Pa.

KELLETT

OLDEST ROTARY WING AIRCRAFT MANUFACTURING COMPANY